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THE UNIVERSITY OF ALBERTA

THE SPATIAL AND ECONOMIC IMPACT OF RECREATIONAL EXPENDITURES AND SALES IN THE PIGEON LAKE AREA OF ALBERTA

by

© KARL MAGNUS BOHLIN

A THESIS
SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE
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UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled "The Spatial and Economic Impact of Recreational Expenditures and Sales in the Pigeon Lake Area of Alberta," submitted by Karl Magnus Bohlin in partial fulfillment of the requirements for the degree of Master of Arts in Geography.

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ABSTRACT

The spatial economic aspects of recreation have so far received very limited attention. This thesis attempts to bridge this gap in current research focusing on the spatial economic impact of a resource based recreation development. Within the context of regional economic planning the emphasis is placed on the economic impact of recreational trade on the local economy as well as an evaluation of ways and means to increase the economic benefits to local residents.

Pigeon Lake which is located within "recreation commuting distance" of major urban centres, notably Edmonton, was selected as the study area. Of the three recreation activities utilizing this resource, cottaging, park visiting, and institutional camps, cottaging was allotted the highest priority in this research. Analysis of variance in expenditures incurred by cottagers supported the hypothesis that socio-economic variables and beach quality do not contribute significantly to the explanation of this variation. Although a similar analysis of park visiting and institutional camps was obstructed by data constraints it is concluded that recreation resource developments elsewhere in the Province of Alberta will generate similar volumes of recreation trade given the size of the particular resource.

In the analysis of the spatial economic impact of recreation developments, hypotheses formulated within the framework of the metropolis - hinterland theory, utilizing the Clawson concept of the five phases of the recreation experience as a spatial parameter, were investigated. Support was found for a static hypothesis stating that the major part of all expenditures made by recreationists accrue to the recollection/and anticipation phases of the recreation experience or the metropolis. Due to data constraints a hypothesis regarding changes over time in the spatial distribution of expenditures and thus the allocation of an economic impact could not be assessed in sufficient detail. It was also found that cottaging contributes more both in relative and absolute terms than other recreation activities to the local recreation trade volume. Among the enterprises catering to recreational trade it appears that those less dependent on imports generally contribute more to the generation of a local economic impact.

Recommendations made in this thesis for the future planning of development of recreation resources include financial support to be made available to local businesses and a more constructive and controlled planning of these resources to increase the economic benefits to local residents as well as public access to the resource.

ACKNOWLEDGEMENTS

To all those who directly or indirectly contributed in the realization of the final draft of this thesis I am greatly indebted. In particular special thanks go to the cottagers and other people at Pigeon Lake who cooperated in the study. This gratitude is also directed to my mother whose wholehearted support has proved an invaluable asset.

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CHAPTER I

I: Introduction to the Problem

I:1 Economics of Recreation: A Literature Review

The problem of evaluating the economic benefits of outdoor recreation has received increased attention in recent years. The study reports published by the Outdoor Recreation Resources Review Commission in 1962 mark a definite breakthrough for scholarly inquiry into the field of outdoor recreation. Thus, most research into the economic aspects of recreation has been initiated since that year.

A discussion of present research concerning the evaluation of economic benefits from recreation calls for a division of suppliers of recreation facilities or areas into public and private agencies, of which the former undoubtedly contributes the major part of all recreation space available. While facilities provided on a private basis are subject to the price mechanism in a market place, this is not the case for recreation provided through the public purse.[1] The benefits accruing to the user of public recreation, which is provided free of direct charge or at a nominal fee, are thus intangible through the market mechanism.[2]

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[1] Carey (1965: 172) stresses the need for research in this field.

[2] Additional benefits may arise from option demand, see eg. Krutilla (1967: 780), Stoevener and Brown (1967: 1296), and Pearse (1968: 88).

One of the earlier attempts to evaluate the consumer surplus of non-priced recreation was made by Trice and Wood (1958: 195-207).[3] Stoevener and Brown (1967: 1295) state two reasons for the development of techniques to evaluate the extra market benefits of public recreation; the need for guidance in resource allocation and the current work in estimating statistical demand functions for such facilities.

The development of evaluation techniques for extra market benefits has proceeded in two directions, both of which attempt to assess willingness of recreationists to pay for access to a non-priced facility. The direct techniques first developed by Knetsch and Davis (1966) is based on enquiring of recreationists how much they would be willing to pay for access to an otherwise free recreation opportunity. It has been applied in two case studies in Alberta by Pattison and Phillips (1971: 72-85) and Whiting (1972).

The second approach attempts to derive willingness to pay through the use of indirect evidence especially of recreationists' propensity to incur travel costs. The pioneering work was made by Clawson (1959) utilizing an idea proposed by Hotelling. Some of the conceptual problems inherent in the initial formulation by Clawson have been discussed by Knetsch (1963: 387-396) and Clawson and Knetsch (1966). Additional refinement of the Clawson approach has been made by Boyd and Tolley (1966: 984-1001) and Gillespie and Brewer (1968: 82-90).

---

[3] The merits and drawbacks of the Trice and Wood method has been disucssed by Carey (Ibid.: 174-175).

A different indirect approach to evaluation, which is not hampered with many of the assumptions of the Clawson technique, has been made by Pearse (1968: 87-94).[4] Sources of bias and applicability of both the direct and indirect approach to evaluation of extra market benefits have been discussed by Beardsley (1971: 175-180).

The attempts to evaluate non-priced recreation, as outlined above, have been criticized on several grounds. A comprehensive review of this disucssion is presented by Stoevener and Brown (1967: 1296-1297).[5]

I:1.1 The Economic Spatial Impact of a Recreation Development

Despite distortions in the market place it is assumed here that the price of privately provided recreation reflects all benefits and costs involved in the provision of such facilities and that these characteristics could be evaluated for publicly provided facilities through other means than the market mechanism.

It seems fruitful to separate the literature on the spatial economic impact of recreation according to the five phases of a recreation experience as outlined by Clawson and Knetsch (1966: 33-36). In a spatial context anticipation (1) and recollection (5) would have to occur in the same location. The route of the two travel components, travel to site (2) and return travel (4), would likely vary depending on the character of a trip. Similarly the on-site experience (3) could imply more than a single location. The spatial distribution of expenditures would depend obviously on the relative share of some total amount of money allocated to each phase (1-5), as well as the spatial design of a trip.

---

[4] For a discussion of the assumptions of the Clawson model see Pearce (1968: 89).

[5] In this context see also Seckler (1966: 485-494) and Gardner (1967: 1304-1306). Special reference to the welfare aspects of recreation is made by Frey and Gamble (1967: 1307-1316), Norton (1967: 1317-1319) and Robinson (1967: 71-83).

The enquiry into the economic significance of the anticipation and recollection phases is virtually non-existent. The extra market benefits discussed above would clearly be attributed either to the recollection or anticipation phases or both. The phase which will be attributed the extra market benefits would for example, depend on the ability to foresee what the value of realized benefits would be. However, in a spatial context it is of minor importance whether the extra market benefits are assigned to phase one or five as they imply the same location.

Travel aspects of recreation have been studied in considerable detail although very limited attention has been given to the spatial distribution of associated expenditures. The friction of distance in recreational travel patterns has been discussed by for example Rigby (1966), Deasy and Griess (1966: 290-306) and Wolfe (1970: 85-88), (1972: 73-76).

Richards (1967: 117-123) has remarked on the impact of road quality on selection of recreation sites. Campbell (1966: 88) has implicitly recognized the difference in allocation of expenditures depending on the character of a trip.

The phase of the total recreation experience left to discuss is the on-site experience. The research on the derivation of statistical demand curves by Clawson and associates, has previously been mentioned. Using Clawson's (1966: 37) classification of recreation resources into user oriented, intermediate, and resource based, Norton (1967: 1318) states that current research is extremely biased towards the study of resource based facilities. The significance of intervening opportunities for the distribution of expenditures, both with reference to travel and site, has been recognized although not much research has been devoted to this field.[6] The potential impact of pricing policy for a particular site on the selection of other facilities has been commented on by Ullman and Volk (1962: 473-484).

A large part of the resource oriented literature has dealt with the evaluation of a specific activity or a specific aspect of recreation. Pearse (1968: 100-111) has studied contributions of non-resident hunting and associated guiding to the East Kootenay and British Columbia economy. Pattison and Phillips (1971: 72-85) have evaluated the benefits of big game hunting accruing to the Province of Alberta. Klippenstein (1973) has studied the contributions of farm based recreation to farmer's incomes. Fine and Werner (1960) have reported on expenditures incurred through ownership of cottages by residents and non-residents in Wisconsin.

---

[6] For definition of the concept of intervening opportunities see Stouffer (1940: 846-849).

Limited in scope to a certain aspect of recreation are the studies conducted by Shutjer and Hallberg (1968: 572-583) and Conner, Gibbs and Reynolds (1973: 27-38) concerning the effect of recreational developments on rural property. Similar with respect to scope and content, are discussions by Ragatz (1970: 118-126), Garbacz (1971: 418-421) and Ricky (1972: 387-392) on the effects of rising property values on the tax base.

Only limited research has been devoted yet to the study of the secondary benefits from recreation to a local economy. This is particularly surprising when recreation is suggested to be one activity which could assist in raising the income levels in many rural problem regions. The lack of research is especially apparent concerning the factors which determine the size and spatial extent of an impact as well as the role played by different recreation activities in contributing to such an impact.

Harper, Schumudde and Thomas (1966: 95-102) have proposed a theory for recreational development based on growth pole and central place theory. They argue that a nodal development would offer both internal and external economies of scale for investments in social overhead capital and that an agglomeration of activities would increase the range of goods provided, which would multiply rather than add benefits. Similar conclusions were arrived at by "kommitten för planering av turistanläggningar och friluftsområden"[7] (Åre 1971) in their development plan for a Swedish recreation area.

Bird and Miller have studied the importance of tourist trade in contributing to the incomes of local residents in the Missouri Ozarks.[8] The relative importance of recreation as compared to other sectors of a county's economy has been evaluated by Gamble (1967) and Hughes (1970) using input-output analysis. A simplified input-output analysis, termed a from-to model, has been developed by Kalter (1966) in a study of the economic effects of water-based recreation projects on local political subdivisions in Wisconsin.

The aforementioned studies have in common the use of some administrative unit as a study area. Space is treated then on a nominal scale, that is, expenditures can occur either within or without the particular economy. The spatial allocation of leakages from the local economy to the rest of the world and expenditures that were incurred outside the area of study have been very much overlooked.

---

[7] "The Committee for Planning of Tourist Facilities and Open Space" (translation).

[8] Aldskogius (1968: 6) has pointed out the lack of spatial considerations in evaluation of the income generation effects of recreation.

I:2 Objectives and Scope of Study

Outdoor recreation has attracted considerable attention in recent years as a possible tool for reducing economic disparities particularly by inducing growth in depressed rural economies. It is therefore surprising to find that very little research has been conducted in this field of the economic impact of outdoor recreation. To accomplish the task of assessing the potential utility of outdoor recreation in regional development, introduction of a spatial variable seems to be a necessary prerequisite. The lack of such a spatial framework in present research concerned with the evaluation of size, type and location of expenditures associated with participation in outdoor recreation has been previously mentioned. In this context it is the author's contention that there is considerable potential for additional research.

The prime objective of this study is an attempt to shed additional light on the economic impact of a rural, water-based recreation development with specific reference to its spatial dimensions. Accordingly, there are three main objectives of this study.

The first objective is to assess the magnitude, type and location of money flows directly and indirectly attributable to engagement in outdoor recreation activities. Through the establishment of trade areas for recreational goods and services, an attempt will be made to measure the spatial extent of the economic impact of a recreation resource on the surrounding economy.

The second objective is to evaluate the relative importance of different recreation pursuits in contributing to the generation of money flows, their size, type and location. It also comprises an assessment of the homogeneity within each recreation category as well as an attempt to identify causal variables with respect to the generation of such monetary flows.

The third objective is concerned with the evaluation of the direct and indirect economic impact on the local economy.[9] This would involve an evaluation of the characteristics of businesses catering to recreational trade, the size of leakages from the local to non-local economies and what measures, if any, which could be suggested as means to decrease any such leakages.

The three objectives outlined above, it is suggested, could form the basis for extending the findings of this study to embrace other water-based outdoor recreation developments in the Province of Alberta.

I:3 Research Hypotheses

The conceptual basis for expressing hypotheses concerning the spatial economic impact of a rural based recreation development can be sought in a metropolis-hinterland framework (see for example Frank 1969 and Friedman 1963). At a regional scale this can be conceived of as a hierarchy of central places with several metropolises and hinterlands, the highest-order centre being the dominant metropolis. The significant differences between the metropolis and its hinterland, in the context of the spatial allocation of an economic impact, are those differences which the two economies themselves exhibit. The metropolis relative to the hinterland, possesses a diversified economy with many and strong linkages connecting its economic sectors. As a result of the linkage structure the metropolis, for any given amount of money induced into its economy, will register a larger total multiplier impact than will the hinterland economy.[10] Further, the relationship between the metropolis and hinterland economies suggests that much of the money induced into the hinterland economy will leave the hinterland economy as leakages, which will filter back into the metropolis' economy. This is due to the weaker and less developed linkage structure within the hinterland economy as well as its spatial integration into the metropolis' economy.

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[9] The local economy will be determined through the analysis of trade areas.

A further characteristic of the relationship between the metropolis-hinterland economies, which may have a specific bearing on the spatial allocation of expenditures associated with recreation, should be mentioned. The metropolis will through internal and external economies of scale appropriate a comparative advantage in the terms of trade with the hinterland. Such terms of trade are of special importance for lower order goods as these are supplied both in the metropolis and hinterland. Thus, a recreationist, whose origin in the vast majority of cases will be the metropolis, will likely employ the opportunity to stock up, even with low order goods, before leaving for the selected recreation area(s). The character and duration of a particular trip would no doubt influence the share of the total cost for a recreation trip which would be allocated to this location.

---

[10] Total multiplier impact refers to the sum of direct and indirect effects.

Another fact which constrains the ability of any recreation development to induce growth in the hinterland economy is that recreationists use mainly final demand goods. Final demand goods have weak backward linkages, which is due to the fact that most finished goods have passed through several stages of processing before entering the market. Consumption of such goods will have repercussions through substantial parts of the whole economy. Consequently, the actual effect on any particular segment of the economy will be limited, particularly the sector where final consumption occurs.

Three overall hypotheses will be elaborated at this stage of the study. As the study unfolds additional hypotheses have been developed or initially formulated ones refashioned.

1. The major part of the economic impact of a hinterland based recreation development will be felt within

the economy of the metropolis.[11]

2. There is a significant difference between different recreation pursuits as to their generation of money flows with respect to type, size and spatial distribution.

3. The indirect effects of recreation trade on the local economy will be very low, if any.

I:4 Study Area

Pigeon Lake (see Figure I) constitutes the recreational resource on which this study focuses. The actual extent of the study area could not be specified in detail before field survey was undertaken because it encompasses the area or locations that interact with this resource. There are two major reasons for chooosing the Pigeon Lake resource for this study:

(a) the recreational development is mixed, that is, several different types of recreation make use of the lake. This facilitates a comparison with other recreation areas;

(b) Pigeon Lake is located within 'recreation' commuting distance from major population concentrations, the main one being Edmonton, which suggests that recreation development there ought to have a greater economic impact potential on the rural area than if the lake had a more

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[11] The dichotomy metropolis-hinterland could also be referred to as urban-rural.

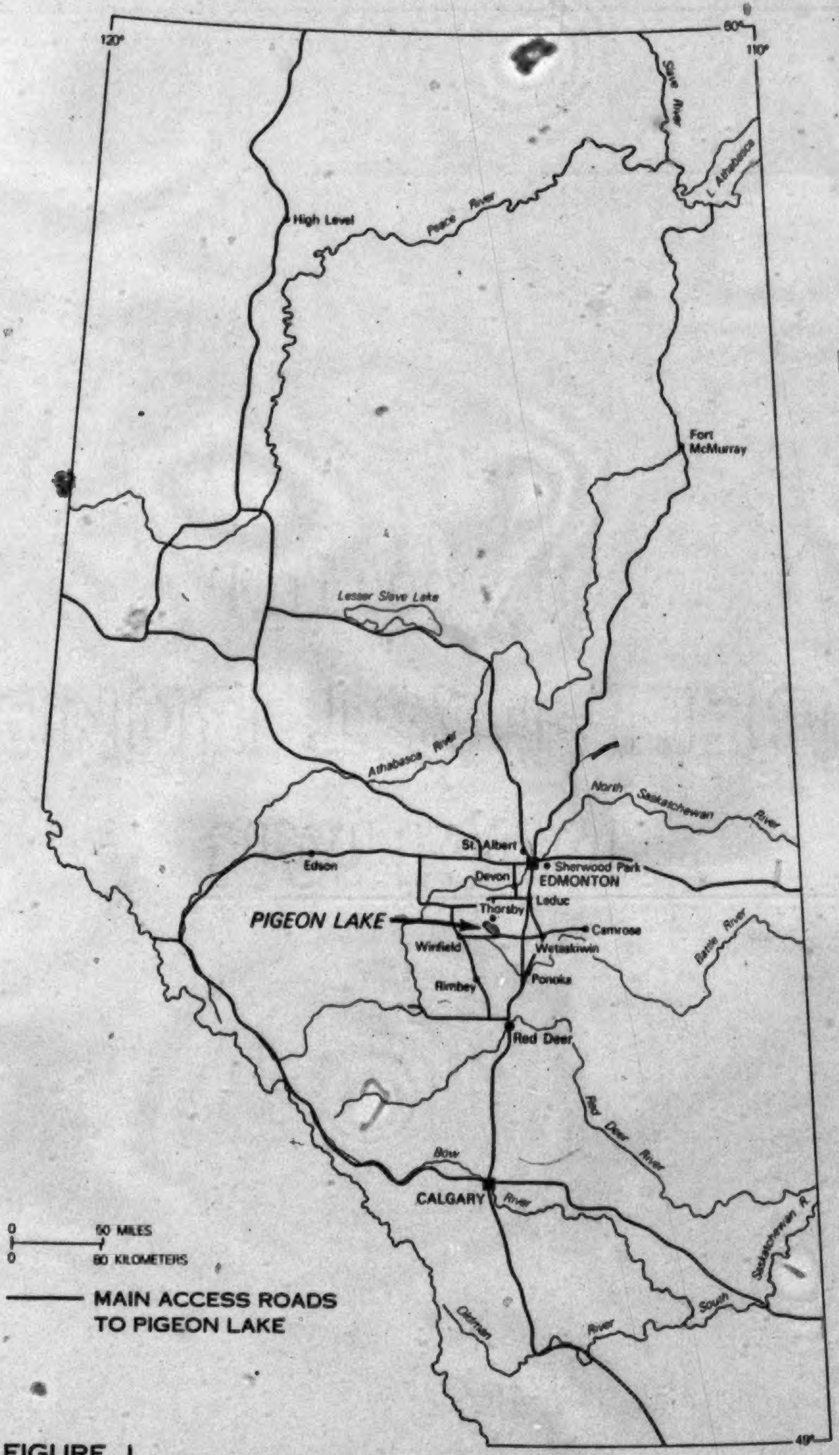
120°
60°
110°
Slave River
L. Athabasca
High Level
Peace River
Fort McMurray
Lesser Slave Lake
Athabasca River
North Saskatchewan River
St. Albert
Edson
Devon
Sherwood Park
EDMONTON
Leduc
Thorsby
PIGEON LAKE
Camrose
Winfield
Wetaskiwin
Battle River
Ponoka
Rimbey
Red Deer
Red Deer River
Bow
CALGARY
River
Saskatchewan R.
South
Oldman
River
49°
0 50 MILES
0 80 KILOMETERS
MAIN ACCESS ROADS TO PIGEON LAKE

FIGURE 1

LOCATION OF PIGEON LAKE IN ALBERTA

remote location.[12]

An additional advantage in selecting this study area is an Indian reserve located at the southeast end of the lake which will make it possible to shed light on the extent to which Indians benefit from recreational development in rural Alberta.

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[12] Support for the assumption that Pigeon Lake is situated within recreation commuting distance from major population centres can be found in the studies by Rigby (1966: iv) and Anderson (1967: 118).

CHAPTER II

II: Research Methodology

II:1 Introduction

As outlined in the discussion of the objectives of this study the overall task has been to gather information pertaining to the generation of expenditures associated with participation in outdoor recreation activities and to determine direct and indirect effects of these expenditures on the economies concerned.

Different recreation pursuits, such as park visiting and 'cottaging', involve different types of expenditures reflecting the character of the particular activity. The initial task to be carried out therefore, was to establish an inventory of recreation activities which make use of Pigeon Lake as a recreation resource. This was deemed necessary for two reasons. First of all, appropriate research methods had to be designed. Secondly, with finite time and monetary resources at the author's disposal, criteria for formulating research priorities had to be established.

Three types of recreation uses of the lake were identified: cottaging, public park and beach visiting, and institutional camps. From previous studies of the recreational development at Pigeon Lake by Sabine (1969), Stewart (1970), Battle River Regional Planning Commission (1966) and Parlby

(1968), it was concluded that cottaging constitutes the main land use and therefore quite likely would be the economically most significant recreational activity. It was further surmised that public parks and beaches, attracting large numbers of visitors in the summer season, although limited in terms of land use, would be of importance to this study. On the other hand, the character of the institutional camps, which will be discussed in some detail later, suggested that this activity would be of less consequence concerning the generation of expenditures on recreation.

II:2 Data Sources and Methods of Data Collection

Data was collected on cottaging, park and beach visiting, and institutional camps with a priority ranking in this order for the completion of field research. The information obtained about the first two activities was utilized as guidance for the survey of businesses trading with recreationists. In the following paragraphs the procedures for data collection will be discussed for each of these groups separately.

II:2.1. Cottaging

The variables selected, on which information was gathered, can be divided into two groups. The first category of variables is concerned with the measurement of monetary outlays resulting from the ownership and use of a cottage. The second set of variables is intended to establish a basis for a description of cottaging as well as to provide data to discern any causal relationship between spending patterns and characteristics of the cottagers.

There is no public agency which collects information of this kind, with the exception of property tax records.[1] None of the previously conducted studies of recreation in the Province of Alberta and especially those of recreation on Pigeon Lake have collected any information directly useful for this study. Several, of these studies also work with data of questionable reliability. This results from the use of mailed questionnaires for data collection. The high non-response rate and subsequent problems of assessing the bias of data involved with that survey method has been discussed elsewhere.[2]

II:2.1.1 Design of Questionnaire

The only way of obtaining as complete data as possible for this study therefore, was to approach the cottagers using some kind of questionnaire. However, before any questionnaire could be designed it was necessary to determine what technique should be used to obtain information sought, as different techniques raise different demands on the design of a questionnaire.[3] Two techniques of possible use to this study were investigated; the use of mailed questionnaires and personal interviews.

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[1] Such records are not usually available to the general public.

[2] The use of different techniques of information gathering and associated questionnaires have been discussed by Burton and Noad (1968: 26-28).

[3] Ibid.

One serious shortcoming of the mailed questionnaire, that of a low response rate and possible bias of data, has already been mentioned. Some other drawbacks of this method, which are of special pertinance to this study deserve mentioning. It was clear at an early stage of the work that the cottage questionnaire would have to be of a rather substantial length in order to cover all relevant information for this study. It would also contain questions that could be perceived as intrusive to the cottager's privacy. Considering the response rate experienced by others who have used comparatively 'light' questionnaires it seems very probable that a mailed questionnaire would have reduced an already low response rate even further.

A second problem with the mailed questionnaire is that it demands a very clear and easily understood questionnaire. Apart from the amount of information sought and its possible intrusiveness, the questionnaire would also comprise a set of filter questions. This would most likely lead to an additional toll on the usable response, as one would expect an increase in incomplete and incorrectly completed returns.

The main advantage of the mailed questionnaire is that it is relatively cheap especially if one equates time with cost. However, in the context of this study such benefits are somewhat reduced as time would have had to be devoted to distribution of questionnaires as the cottages on Pigeon Lake are not covered by a regular, if any, mail service.[4]

The main disadvantage of the personal interview techniques is that it is relatively time consuming. There is also the possibility that the interviewer may introduce some bias in the results obtained. However, through the use of a standardized questionnaire and a careful and consistent performance one could tentatively suggest that a bias, if any, would be unlikely to be worse than a bias in the returned questionnaires of a mail-out survey.[5]

The biggest advantage with the personal interview method is that it usually yields a return, which percentage wise, is large enough to satisfy constraints of statistical techniques of analysis. This is of utmost importance as description and analysis of a phenomenon through the use of statistical methods without the proper basis, will have to rest on heroic assumptions making the validity of the results doubtful. Another advantage of the personal interview technique is the possibility of obtaining extra information often offered by the interviewee which helps in interpretation of the data.

---

[4] Another way of distributing the questionnaires would have involved gathering of names and home addresses of cottagers through the use of tax records. The fact that such records are not easily available, made such a prospect less promising.

[5] This should not be confounded with any bias that could stem from non-response to a mailed questionnaire.

In the light of what has been said about these two methods of data collection and the relative importance of cottaging it was decided to employ the personal interview technique for collection of information concerning this activity.

A primary concern when designing the questionnaire was that in instances where the same variables had been used in other studies the operational definitions should be such that a comparison of the results of this and other studies could be accomplished.[6] It was found that there is very little consensus as to the operational definitions of similar or identical variables among these studies. To achieve some comparability the general rule was to apply, when applicable, the highest scale or groupings on the same scale of measurement used in previous studies.

The cottage questionnaire was prepared in two versions.[7] The cottage population can be divided into two sub sets; those who bought their cottage and those who built it. The only difference between the two questionnaires is that version B aimed at those who built their cottage, contains questions concerning expenditures involved in building the cottage.

A few comments should be made concerning the content and internal order of questions in the questionnaires. Thus, questions one to twelve and forty-six to fifty-three (one to twelve and forty-two to forty-nine on version A) concern information about the cottage itself and its users. The remaining questions all deal with fixed and variable costs connected with the ownership of a cottage. The first twelve questions, apart from supplying valuable information, were intended as a 'warm up' of the interviewee. For the same reason questions forty-six to fifty-three were placed at the end as it was hypothesized that some respondents could be sensitive to questions about their income. Appearing at the end of the interview they would not be able to refuse to do the whole interview on the basis of one or two questions and at that point they would perhaps be less concerned about this type of questions having answered questions about their personal expenditures and having obtained an understanding of the study itself.

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[6] The studies in which questionnaires were used to obtain a similarity in operationalization of variables are Nowicki (1969), Parlby (1968), Sabine (1969) and Whiting (1972).

[7] The questionnaires are found in Appendix 1.

To obtain some measure of variable costs, associated with consumption of food stuffs and the like while staying at the cottage, an expenditure diary was compiled.[8] The expenditure diary consists of seven pages. Each respondent was then asked to complete the diary, when applicable, for the seven consecutive days following the day of the interview and when completed mail it back to the author.[9]

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[8] The expenditure diary is attached to Appendix 1.

[9] A prestamped envelope was provided for this purpose.

The intention of using an expenditure diary is that it would yield a better estimate of this type of expenditures. It would probably be very difficult for the respondent to recall such outlays with any accuracy as they are relatively small and of a less discrete character in a time dimension than say a major repair of the cottage.

II:2.1.2 Selection of Sample for Cottage Survey

Sabine (1969: 13) determined the number of cottages on Pigeon Lake to be 1040 in 1968. This made it clear that a complete investigation of the cottage population was beyond the capability of available resources. To elaborate the size of the sample to be taken it was necessary to determine the size of the cottage population at the time of this study.[10] The author was very fortunate as Battle River Regional Planning Commission had just finished the preparation of maps showing cottage development along the shoreline of Pigeon Lake. However, in the case of the hamlet of Mulhurst and the summer village of Ma-me-o Beach (see Figure II) additional refinement of the cartographic material was needed. In these two cases not all dwellings plotted on the maps are used primarily for recreational purposes. For the hamlet of Mulhurst this evaluation was accomplished through the use of assessment records.[11] If the home address of the property owner was

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[10] This refers to the year 1973.

[11] Contact was taken with the Reeve at the County Office in Wetaskiwin, who granted access to these records.

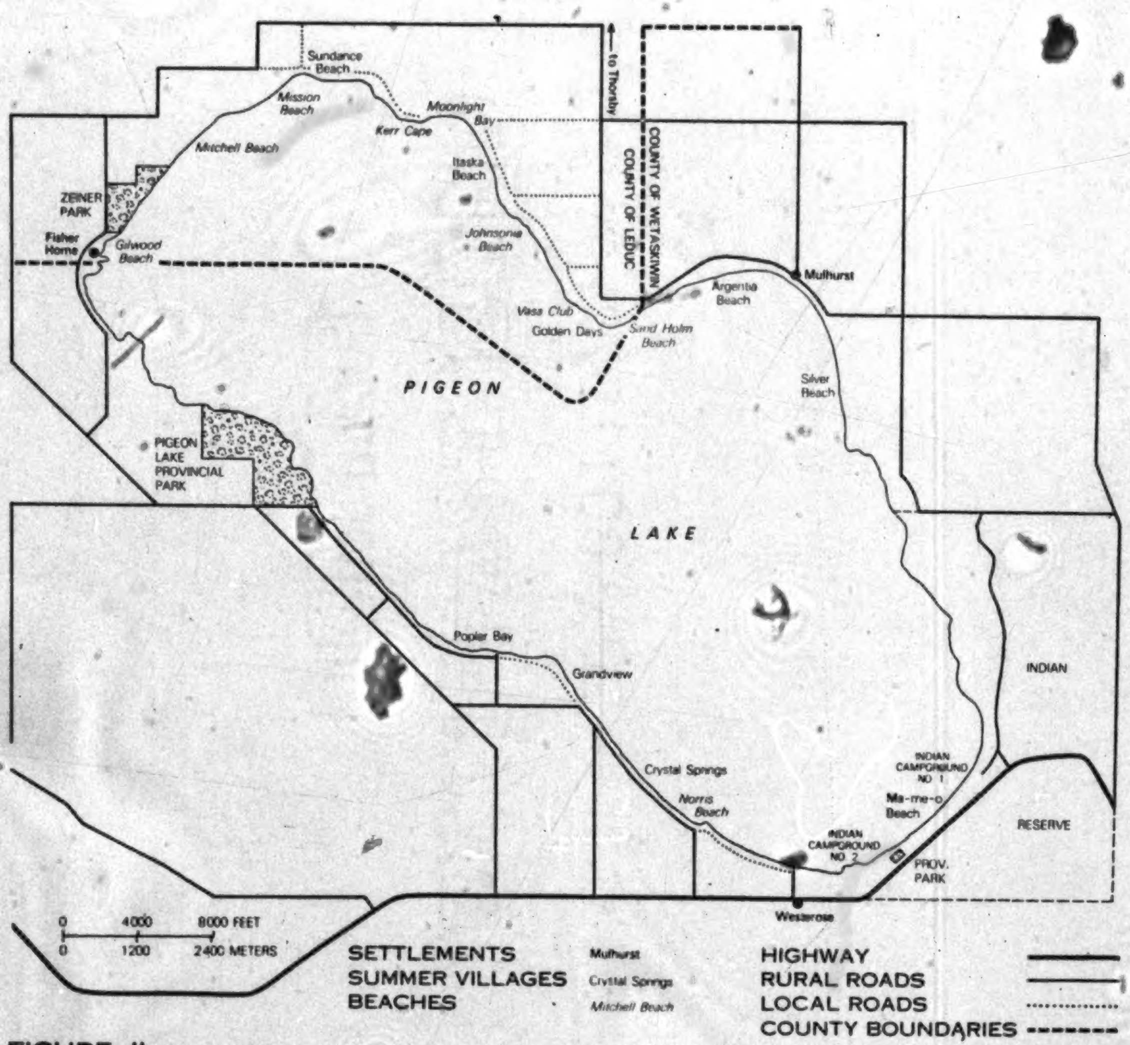
Sundance Beach
Mission Beach
Moonlight Bay
Kerr Cape
Mitchell Beach
Itaska Beach
ZEINER PARK
Fisher Home
Gilwood Beach
Johnsonia Beach
to Thorsby
COUNTY OF WETASKIWIN
COUNTY OF LEDUC
Mulhurst
Argentia Beach
Vasa Club
Golden Days
Sand Holm Beach
PIGEON
Silver Beach
PIGEON LAKE PROVINCIAL PARK
LAKE
Poplar Bay
Grandview
INDIAN
Crystal Springs
Norris Beach
INDIAN CAMPGROUND NO 1
Ma-me-o Beach
RESERVE
INDIAN CAMPGROUND NO 2
PROV. PARK
Westerose
0 4000 8000 FEET
0 1200 2400 METERS
SETTLEMENTS Mulhurst
SUMMER VILLAGES Crystal Springs
BEACHES Mitchell Beach
HIGHWAY
RURAL ROADS
LOCAL ROADS
COUNTY BOUNDARIES

FIGURE II

PIGEON LAKE RECREATIONAL AREAS

other than Mulhurst, the building was classified as a cottage.[12]

Tax records were not available for Ma-me-o Beach as in the case of Mulhurst. Ma-me-o Beach also presented a new, and more delicate, problem as to the definition of the cottage population. At the end of the year 1972 the village had 109 permanent residents.[13] The majority of these are persons who, at the time of retirement, made their cottage at Ma-me-o Beach their permanent place of residence. A small proportion of the year-round population consists of those who operate businesses in the village. The dwellings of this latter group are obviously not used primarily for recreational purposes. However, those who made Ma-me-o Beach their place of retirement did this, most likely, because of the recreational opportunities associated with the lake. Therefore it seemed rational to include these dwellings in the population. A survey of the village was carried out and a map relevant to subsequent sampling procedures was prepared.[14]

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[12] The distinction between recreation and non-recreation property made by the counties for tax assessment purposes, was not employed. To be classified as a recreation unit, according to their standards, the dwelling should be used exclusively for recreational purposes, it should not be used in excess of 120 days in a year and should not be rented out. For the purposes of this study it was felt that this definition was too narrow. It would exclude those who do not fulfill the requirements for a tax rebate, but for which the dwelling nevertheless is used primarily for recreation purposes.

[13] Alberta, Municipal Statistics, 1972, p. 169.

[14] Covering the area by foot and consulting with residents when necessary, it was possible to eliminate those

Pigeon Lake is divided between the Counties of Leduc and Wetaskiwin, with the major part of the lake situated in the latter (see Figure II). The maps obtained from the Battle River Regional Planning Commission do not cover the part of the lake which is within the boundaries of the County of Leduc. This northern part of the lake is within the area of jurisdiction of Edmonton Regional Planning Commission, who provided maps of this part of the lake. These maps were of less utility than those supplied by Battle River Regional Planning Commission.

Maps prepared as recently as 1972 were available for the shoreline stretching from the summer village of Golden Days to the summer village of Sundance Beach (see Figure II). However, the only available map of the remaining shoreline, in the County of Leduc, was from the year 1959. These two sets of maps only show subdivision of land. To determine the present number of cottages on this part of the lake each beach was visited and the number of dwellings were counted.[15] Information on the maps that could be readily identified in reality was selected to establish a set of areas for the purpose of sampling cottages.[16]

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dwellings on the map which do not pertain to the population (as defined above). This map was a working document for field work. It is not directly relevant to this presentation and therefore is not included here.

[15] For beaches in this area, which do not have the status of summer village (summer villages keep their own assessment records), assessment records kept at the county office in Leduc were used as a double check so that any non-recreation dwellings were properly excluded.

[16] In several instances it was almost impossible to

Table 1 shows the distribution of the 1479 cottages identified between the eighteen beaches on Pigeon Lake.[17]

To establish an appropriate size for a sample of cottages two factors were taken into consideration. First, the desired precision of estimates of population parameters from the sample had to be evaluated. Secondly, the feasibility of the sample size had to be assessed in the light of available resources, such as time and money.[18]

The precision of an estimate of the population mean from a sample, for a particular variable, can be expressed in terms of probability. Thus, assuming that the frequency distribution for the population is at least not extremely skewed and that the sample distribution is approximately normal, one could for example postulate with a probability of .95, that the mean will lie within the range of

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identify which lots were built on and which were not. Therefore, no maps showing the actual cottage development on these beaches could be prepared.

[17] When comparing the figures of this table with the corresponding ones established by Sabine (1969: 13-14, Appendix B) one is inclined to conclude that Sabine's estimate is too low. Although it seems as if he deducted the cottage developments at Mulhurst and Vasa Club, a total of 129 cottages, it is difficult to believe that the cottage population should have increased by almost 30% in five years. Perhaps the most salient difference for a single beach between these two estimates is for Ma-me-o Beach. As Sabine does not explicitly state how he derived his figures it is difficult to assess what factors cause these differences. However, it is the contention of the author that figures presented here should be regarded as reliable.

[18] This has been discussed by Harvey (1969: 361-62).

TABLE 1

SAMPLING FRAME FOR COTTAGER POPULATION

BEACH	I	II	III	IV	V	VI	VII
Ma-me-o Beach	249	25	23	2	15	7	8
Norris Beach	64	6	6	-	6	2	4
Crystal Springs	127	13	9	4	6	2	4
Grandview	136	14	11	3	6	4	2
Poplar Bay	112	11	10	1	10	3	7
Gilwood - Fisher Home	27	3	2	1	2	1	1
Mitchell Beach	9	1	1	-	-	-	-
Mission Beach	67	7	6	1	4	2	2
Sundance Beach	102	10	9	1	7	6	1
Kerr Cape	6	1	1	-	1	1	-
Moonlight Bay	50	5	5	-	5	3	2
Itaska Beach	56	6	6	-	6	4	2
Johnsonia Beach	61	6	6	-	5	1	4
Vasa Club	57	6	5	1	-	-	-
Golden Days	86	9	7	2	6	4	2
Argentia Beach	103	10	8	2	6	4	2
Mulhurst	72	7	6	1	2	2	-
Silver Beach	95	9	7	2	6	4	2
TOTAL	1479	149	128	21	93	50	43

I: number of cottages
II: number of cottages sampled
III: number of responses to cottage questionnaires
IV: number of non-responses
V: number of expenditure diaries distributed
VI: number of responses to expenditure diary
VII: number of non-responses

SOURCE: Field Research

$\hat{\mu} \pm \frac{2\hat{\sigma}}{\sqrt{n}}$; where $\hat{\mu}$ equals the mean of the sample; $(\hat{\sigma})^2$ is the estimate of the population variance from the sample and n denotes the size of the sample.

When the sample is drawn without replacement and the ratio between sample and population, $\frac{N}{n}$ is greater than .1, the finite population correction should be added to the above expression (Yamane 1973: 168). By specifying an allowable error of the estimate of the population mean at a desired level of confidence the above expression can be manipulated to derive the appropriate sample size.[19] The practical problems encountered when attempting to apply this formula is that the variance $(\sigma)^2$ is unknown and an estimate of the variance is equally intangible.

In general it can be stated that as n increases the precision of $\hat{\mu}$ increases although the additional increments to the precision tend to diminish as n reaches a certain size. To practically solve this problem it seemed rational to take a sample (as large as possible) permitted by constraints exercised by the factors of time and cost.

From the test of the questionnaires it was estimated that an interview averaged 30-40 minutes in duration. This does not include the time spent on moving from one sampled cottage to another. As the cottages sampled for the test interviews were scattered all around the lake it was difficult to arrive at a reliable measure of how much time would be required for this purpose. It was hypothesized that the time needed would be considerably less than indicated by the test interviews. With several cottages sampled from each beach and with the peak usage of cottages occurring during the months of July and August, which would indicate that most cottagers would be available for interview, one could probably concentrate the interviewing to a few beaches at the time.[20] On the basis of this it was decided that a sample size of ten percent of the cottage population would be manageable and sufficient.

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[19] See Snedecor and Cochran (1967: 516-517).

II:2.1.3 Test of Questionnaires

To test the questionnaires twenty cottages were sampled. Five non-responses were registered, of which one was due to refusal of respondent to participate and the four others were caused by the absence of respondents.[21] Repeated attempts to reach absent cottagers were not made, as it was important to get the actual field work started.[22] The test interviews being conducted in early June, there was no particular reason to suspect that these cottagers should in any way differ significantly from those who were available for interview and thus raise any additional demands concerning the design of the questionnaire.

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[20] Parlby (1968: 25) has reported on the use of cottages for different months of the year.

[21] Seven version A and 8 version B questionnaires were employed. The rather minute difference between the two versions did not warrant a separate treatment concerning the design.

[22] The whole work schedule was unfortunately delayed by a delay in the authorization of the research grant.

The results of the interviews were encouraging in that no major discrepancies in the questionnaires were detected. However, a few minor changes were carried out. Thus, four questions were added to the revised questionnaire. Questions ten and eleven (same number on both versions see Appendix 1) were inserted as a check that the respondent did include all members of the immediate family in the answer to question forty (forty-six B) and similarly excluded those, if any, who did not classify for this group. Questions forty-eight and forty-nine (fifty-two and fifty-three B) were added both to make the estimates of costs of ownership of cottage more complete (insurance; question forty-nine A, fifty-three B) and to obtain another variable (floor space; question forty-eight A, fifty-two B), to which expenditure variables could be related.

Questions twenty-five A, twenty-four B and twenty-nine B were rephrased. Initially these questions asked for materials used in connection with building and/or improving the cottage, where they were purchased and how much was spent on each item for each location of purchase. The test interviews made it abundantly clear that these questions were both too complicated to answer as well as to record. The section about materials were therefore dropped. This could be done without any great loss of information as all materials purchased would fall into the category of building supplies.[23]

A short passage of text preceding question twenty-eight (thirty-four B) which was read to the respondent in an attempt to explain the expenses which should and should not be included in the following questions was dropped as it had rather the opposite effect than was intended.

II:2.1.4 Sampling Design

Using Galtung's typology of sampling designs (Harvey 1969: 359) the method of sampling employed in this study would fall into the category of proportionate sampling . It is a probability sample where a certain proportion, of the total population, is sampled from every stratum.[24] In this case ten percent was selected from each of the eighteen beaches on the lake. Two main reasons suggested this method be used instead of a simple random sample.

First, Sabine (1969: 37-41) and Stewart (1970: 24-32) have indicated that there are differences between the beaches concerning the standard of buildings and other improvements of shore land and beaches. If one employed a simple random sample it is quite conceivable, due to a stochastic error term, that the sample would overrepresent some beaches and similarly underrepresent others. Hence, if there are important differences between different beaches in terms of the generation of money flows, such a possible disproportionate representation of single beaches, not accounted for, could significantly alter the conclusions suggested by this study. Although the sample size (see Table 1) prevents a detailed analysis of every single beach separately it will allow for an assessment of groups of beaches.

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[23] Apart from the rather awkward wording of the initial question it was evident that most respondents could not recall where they bought materials.

[24] Probability sampling has been defined by Snedecor and Cochran (1967: 508) as ".... a general name given sampling plans in which:
(1) every member of the population has a known probability of being included in the sample;
(2) the sample is drawn by some method of random selection consistent with these probabilities;
(3) we take account of these probabilities of selection in making the estimates from the sample."

The second reason for taking a proportionate sample refers to the allocation of expenditures. From the map showing access roads to the lake (Figure 1) one would be inclined to suggest that a few roads funnel the major part of the traffic load and that certain roads dominate as access routes for certain parts of the lake. One would similarly suggest that urban developments along these access routes act as intervening opportunities for the part of the lake to which they constitute the dominant route of access but not to others. A sample biased in favour of a certain part of the lake could thus affect estimates of the spatial economic impact of this activity adversely.[25]

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[25] There are several other sampling plans, usually referred to as optimum allocation, which can be demonstrated to

A ten percent sample was thus taken from each of the eighteen beaches. The cottages were numbered on the map of each beach separately and a table of random numbers was employed to select the appropriate number of sample units for each beach (see Table 1).[26] In case of a sample unit being reclassified as not pertaining to the population, the last reading for each beach in the table of random numbers was marked off. In this way it would be possible to sample additional units without jeopardizing the randomness of the sample. However, this was never utilized.

II:2.1.5 Response and Non-Response to Cottage Questionnaires

The interview with cottagers were carried out from late June to late August. During the month of July, when the bulk of interviews were conducted, the author resided at the lake. Of the cottagers which remained to be interviewed after this date the majority were only available on weekends. It was, however, desirable to complete as many interviews as

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yield more precise estimates of the variance and thus also the mean (Snedecor and Cochran:1967: 523-26). The provision is that the substrata of the population is efficient, that is, the within strata variance is lower than the between strata variance. Compared with proportionate sampling the optimum allocation schemes allot more sampling units to less homogeneous strata(s) thereby further increasing the precision of any estimates from the sample. However to carry out the allocation of sampling units for each strata one has to know the variance of each strata or at least be able to produce a reasonable estimate of this characteristic. As previously mentioned this has not been possible.

[26] The table of random numbers was taken from Friedrichsen and Jönrup (1970: 36-38).

possible in the week days because interviews with visitors to the lake would have to be concentrated to weekends as well. In several of these instances the author was told to reappear on the weekend when the husband would be present, as he was said to be the only one competent to answer the questions contained in the questionnaires. Obviously this made the weekday interviewing very inefficient with lots of time being wasted on transportation from one beach to another.

The interview routine was organized so that after a short introduction of the interviewer and the purpose of the interview, the respondent was asked to read through a letter of introduction (this letter appears as Appendix 1).[27] A small fraction of the interviews approached a rather informal character. Nevertheless the questions were asked exactly the way they appear in the questionnaires (see Appendix 1). At the end of each interview the respondent was asked if he or she would be willing to participate in filling out the expenditure diary (see Appendix 1). In most cases the respondent agreed and was given a brief instruction how to complete the diary and a prestamped and addressed envelope in which to return the diary when completed.

The response rate for the cottage questionnaire is just below eighty-six percent (85.9%) or in absolute numbers 128 out of 149. From table 1 it can be seen that the non-response rate is distributed in a rather equal fashion between the different beaches. The relative smallness of the non-response rate and the lack of reasons for suspecting any particular bias did not warrant a special analysis of the twenty-one non-responses.

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[27] An identical letter was used in the test interviews.

The expenditure diary will be discussed in further detail in Chapter IV. However, a few comments should be made here. For the interviews conducted after August the nineteenth, which produced a total of twenty-nine responses, no diaries were handed out. The reason for this was that most people would not be present during the following days covered by the diary. Time had by then become a very precious commodity and by excluding the diary, additional time would be available for interviewing.[28] Six refusals to participate in completing the diary were encountered prior to August the nineteenth. This makes the total number of diaries actually distributed to be ninety-three. Fifty of these were returned which makes the response rate slightly below fifty-four percent (53.8%).

II:2.2. Public Park and Beach Visiting

When assessing the cartographic material available concerning the recreational development on Pigeon Lake one is inclined to suggest that the general public has been given ample consideration in terms of the number of points of access to the lake granted them. However, in reality most of the areas designated as park reserves, within the boundaries of the summer villages, have remained uncleared of bush or are otherwise in such a condition that access to the lake is obstructed.[29]

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[28] In retrospect it seems quite justified to state that a sample size exceeding ten percent would not have been manageable, which confirms the validity of the original sample size.

Seven beaches or shoreland areas which provide the general public with access to Pigeon Lake can be identified: Ma-me-o Beach, Crystal Springs, Pigeon Lake Provincial Park, Zeiner Park, Mission Beach, Mulhurst and Silver Beach. Four of these; Crystal Springs, Mission Beach, Mulhurst and Silver Beach are of little importance to this study.[30] They are small in size, and although open to all, mainly used by cottagers whose cottage does not have a water frontage.[31] The remaining three areas, particularly Ma-me-o Beach and Zeiner Park, are characterized by very intensive use during the months of July and August. This is especially true for weekends. For this reason these three park areas were selected as targets for the visitor survey.

The summer village of Ma-me-o Beach is located within the boundaries of Indian Reserve No. 138A (see Figure II).

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[29] Stewart (1970: 55) has discussed the underlying reasons for this.

[30] In the case of Crystal Springs, Mission Beach and Silver Beach only a small portion of the total beach is open to the public.

[31] Sabine (1969: 10-11) has summarized the reasons for the lack of use of these areas.

At each end of the summer village is a campground operated by the Indians. A fee is charged for access. The summer village also accommodates a provincial park to which access is free of charge. It is however restricted to day use only and does not have direct access to the lake. In this context Ma-me-o Beach constitutes an important anomaly, among the cottage developments on Pigeon Lake, in that all of its beach is open to the public. Access to the beach is provided by the open space which separates each block of cottage development and boats can be launched at the centre and south end of the village. The fact that most of the back shore is developed for cottaging, however, makes the beach rather narrow and its use is therefore limited to activities such as swimming and sunbathing.

Zeiner Park, located at the opposite end of the lake to Ma-me-o Beach, is owned and operated by the County of Leduc (see Figure II). It exhibits similarities with the Indian Campgrounds in terms of size and quality of beach but is somewhat more expensive which at least in part reflects a better supply of facilities.

The third park, Pigeon Lake Provincial Park, is located west of Poplar Bay (see Figure II). It is a new facility opened to the public in the summer of 1973. Construction work was still being carried out in 1973. It bears very little resemblance to the other two areas. A fee is levied for overnight stay and use of facilities. The latter are quite superior to those available at Ma-me-o and Zeiner. On the other hand this park has a mediocre beach and an overall lack of open space that could support outdoor activities not directly associated with the use of the lake.

II:2.2.1 Selection of Survey Technique and Design of Questionnaire

As in the case of cottaging, no statistics relevant to this study on visitors to Pigeon Lake were available. Therefore, the only way of collecting such statistics was to conduct a survey. The anticipated time requirements for the survey of cottaging, substantiated through the test of cottage questionnaires, narrowed down the number of survey techniques, leaving only some type of a mailing procedure as a feasible solution.[32] The shortcomings inherent in this type of method and the constraints it raises on the design of a questionnaire have already been outlined.

Precautions were taken similar to those used when elaborating the cottage questionnaire, in order to make the operational definitions such that a comparison with other studies would be possible. The necessity of keeping the questionnaire rather brief eliminated some questions that would have permitted a more extensive comparision between park visiting and cottaging. The type of questions contained in the visitor questionnaire is similar to those appearing in the cottage questionnaire. Differences that prevail between the two, merely reflect the difference in character between these groups of recreationists. The visitor questionnaire and cover letter is attached as Appendix 2.

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[32] A second reason for deciding on a mailing technique is the construction of question #13.

Unlike the cottage questionnaire the visitor questionnaire was never tested before it was used. There are several reasons for this. Questions one to six in the visitor questionnaire bear a close resemblance with questions used in other studies under similar conditions.[33] The remaining questions, seven to fourteen, were used in the survey of cottaging. Although the latter had been tested under somewhat different circumstances it seemed reasonably safe to assume that they were comprehendable to the interviewer as well as that they measured what they were intended to do. Furthermore, the complete lack of any statistics concerning attendance to these areas made it almost impossible to establish a sampling frame in time to carry out a reliable test of the questionnaire. The utility of testing a questionnaire by use of a mail operated technique can also be seriously questioned.[34] The often sizeable non-response encountered when using this technique might very well accommodate those, for whom the questionnaire was inappropriate one way or the other. Hence, a response indicating the questionnaire was acceptable might have little bearing on reality.

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[33] See Stouffer, 1940. op. cit.

[34] Any other method of testing the questionnaire would not have been compatible with the timetable.

II:2.2.2 Establishing the Sampling Frame

Without knowing the total number of people attending these parks for a whole season, a few reconnaissance trips in late June clearly demonstrated that a complete investigation would be an impossible task. No statistics on attendance (prior to 1973) to these parks were available, with the exception for Ma-me-o Beach Provincial Park. Statistics on attendance to this park were thus attained for the year 1972.[35] Whiting (1972: 43-45) has pointed out that the method of using traffic counters in compiling this information yields very unreliable estimates and that in most cases the actual attendance is considerably lower than indicated by these figures.[36] In the case of Pigeon Lake Provincial Park no records concerning attendance in previous years were available simply due to the fact that 1973 was the first year the park was in operation. For Zeiner Park and the Indian Campgrounds, no such records have ever been kept.

The only way of establishing a sampling frame then was to attempt to obtain some figures on attendance for the early part of the then current season. Contact was made with the park warden(s) for each park respectively. A positive response was received from the wardens for the Provincial Park and the Indian Campgrounds. For the latter attendance was recorded from July the twelfth to July the twenty-third. The statistics on attendance obtained for the Pigeon Lake Provincial Park were unfortunately of mediocre quality. The traffic counter had not been working properly at the time and although records were kept of those who payed any fee, no estimate of day visitors alone could be established. For Zeiner Park the park warden was not willing to co-operate. Instead, approximate estimates of attendance to this park were derived from ticket receipts available at the County Office in Leduc.[37]

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[35] Alberta, Department of Lands and Forests, Provincial Parks Division 1972.

[36] Mr. Suffin, who forwarded this statistics, pointed out that the 1972-73 figures for Ma-me-o Beach Provincial Park were probably below average in terms of accuracy. In 1972 this park had four entry-exit points. (Three of these have now been closed). This condition tended to encourage re-entries as well as some through traffic, thus boosting the figures additionally.

II:2.2.3 Selection of Sample for Visitors

The lack of any statistics on park attendance made it necessary to delay decisions concerning size of sample and accordingly the use of sampling techniques. By the time this information was available the interviews with cottagers had reached a phase where most of the remaining interviews had to be conducted on weekends. This posed a real conflict as the very bulk of park visiting occurs on weekends as well. It was clearly outside the capacity of one man to accomplish both of these interview tasks. The author then managed to engage a few friends in helping with the park visitor interviews. In spite of this some cut-backs in the work load seemed inevitable. It was therefore decided to exclude Ma-me-o Beach Provincial Park from the investigation.

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[37] These estimates could not be absolutely accurate. In most cases it was possible to separate weekday and weekend attendance. No tickets were dated. However, the receipts in form of booklets were dated. Due to the fact that the number of entries peaked during weekends several of these booklets were sold out in the time space of one or two days. Another factor reducing the accuracy of these estimates was that it was very difficult to ascertain how frequent those who acquired seasonal tickets were using the park.

The major justification for this decision is that, while this park only accommodates day visitors, it would most likely be of less significance in terms of generating any local trade, than would the other parks. In the Clawson framework most expenses particularly for food stuffs will most likely occur in the anticipation stage of a trip.[38] With increased duration of the on-site experience as is possible at the other parks, it seems reasonable to suggest that the propensity to spend money on this type of goods in locations other than the recreationist's place of residence will increase.

The use of population characteristics, given some specified allowable error of the estimates from the sample, in determining the approximate sample size has been previously discussed. It was not applicable in this case for the same reasons that it could not be utilized when determining the size of cottager sample. Instead, the prime factors considered when selecting size of sample were time requirements for distributing questionnaires and the minimum acceptable number of responses. As previously stated time was becoming increasingly scarce at this stage of the project. However, more important was to make sure that the actual number of usable returns was kept above a certain minimum level, appropriate for statistical analysis. Estimating the non-response rate to be in the neighbourhood of sixty percent, a total of 180 questionnaires seemed a reasonable aim. These were then alloted equally between the three parks. The reason for taking a disproportionate sample was that, assuming that the non-response rate to be approximately uniform for all parks, the goal of receiving a fair number of responses for each park would not be jeopardized.

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[38] Only if a change in the spatial allocation of expenditures, not directly associated with recreation, occurs as a direct or indirect result of the use of a recreation facility, would these expenditures be included in the calculation of an impact.

It also seems likely that a large proportion of the consumption of food stuffs for a day's visit to this particular park will occur in the anticipation and recollection phases.

Two possible ways of distributing the questionnaires were considered. Firstly, the questionnaires could be handed out to the visitors according to some rule as they entered the park. Secondly, the visitors could be approached after

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Clearly, this would not be included in any calculation of an impact even on the non-local economy. The possibility that people returning physically exhausted from their recreation experience would consume more and perhaps dearer food etc. ought to be included in such calculations at least from a conceptual viewpoint. However, because of the practical problems involved and the likely minute size of these expenditures they will not be considered in this study.

they made their entry to the park. The latter method was chosen, the main reason being that it would be the most compatible with respect to time restraints.

II:2.2.4 Response and Non-Response to Visitor Questionnaire

The questionnaires were distributed on two occasions; the eleventh of July and the third of September. These two days were selected as a result of assistance being available. Although it would have been desirable to have selected dates for the distribution of questionnaires by means of some randomly operated technique there is no reason to suspect that the selection of these two dates should in any way have biased the results.

The visitors were approached and asked if they were willing to take part in the survey and at the same time given the cover letter to read. A short conversation usually followed in which any obscure points were clarified. The respondent then received the questionnaire and an addressed and stamped envelope. It was emphasized that the respondent should not complete the questionnaire before the trip ended. Three parties, one at Pigeon Lake Provincial Park and two at the Indian Campgrounds refused to take part in the survey. Thus, sixty questionnaires were handed out at Zeiner Park and fifty-nine and fifty-eight at Pigeon Lake Provincial Park and the Indian Campgrounds respectively.

The overall response rate of 36.7 percent is somewhat less than suggested. Examining the response rate for each beach separately, Zeiner Park shows the highest, 48.3 percent and the Indian Campgrounds the lowest 27.6 percent; a total range of just over twenty percent.

II:2.3 Institutional Camps

Due to the heavy workload during the summer and the assumed relative insignificance of the institutional camps, concerning the generation of trade, the survey of this activity was postponed temporarily. The fact that it is an organized form of recreation suggested records be kept and the kind of information relevant to this study would be available even in the off-season. Names and addresses of contact persons for the seven camps on Pigeon Lake were obtained.[39,40] A short questionnaire and cover letter stating its purpose, was mailed to the contact person for each camp (see Appendix 3). A total of three questionnaires were returned. Attempts to increase the response rate further by contacting the organizations on telephone were not successful.

II:2.4 Business Survey

From the cottage questionnaires those businesses which are patronized by cottagers were identified. The survey of

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[39] Alberta, Department of Culture Youth and Recreation 1973.

[40] The Alberta Camping Association, 1973.

businesses was designed only to include those commercial outlets that are located within the local economy. To delineate the local economy all businesses located on the lake would clearly be included. To determine how far the local economy extends away from the lake an additional analysis of the responses to the questionnaires and expenditure diary was carried out. The criterion used to decide whether to include a particular business location or not was that it should be frequented by cottagers using the cottage as their base.[41] This led to the inclusion of Thorsby and Winfield in the local economy.

The primary objective of this survey was to make some estimates of the importance of the additional trade brought to the area by people recreating at Pigeon Lake. The fact that all merchandise is imported from outside the local economy suggested that the survey should focus on the "value added" through the provision of these goods. More specifically the questions contained in the questionnaire are mainly concerned with income and employment effects on the local economy resulting from the trade with recreationists. (Questionnaire and cover letter appear as Appendix 4).

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[41] A more appropriate way of determining the spatial extent of the local economy would have been to use the shopping patterns of local residents on the lake (non-recreationistis). However, the fact that Thorsby is very much geared to service the surrounding agricultural community and its closeness to the lake made it seem reasonable to argue that the settlements on the northern half of the lake are serviced by this centre. Winfield was included for the same reasons, although in this case only the bar has any significance to the recreationists.

A total of forty businesses were identified of which fourteen are located in Thorsby, one in Winfield and the remaining twenty-five are at the lake. The interviews were carried out from late August to early September. Thirty-two questionnaires were completed to various degrees. Two refusals were encountered, both in Thorsby. For the remaining six businesses the owners were not available for interviews.[42] A last attempt to obtain information about these businesses was made. The questionnaire cover letter and a stamped return envelope were sent out. One additional response was thus obtained. A reminder was sent to the five remaining firms however without any further response.

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[42] Repeated attempts were made to get in touch with these people.

CHAPTER III

III: Analysis

III:1 Introduction

The analysis of data on recreation at Pigeon Lake and its economic impact on the local and non-local economy will be divided into chapters three and four. Chapter three will deal with each group of recreationists, as previously defined, separately. The section of the analysis which discusses the spatial aspects of recreation expenditure will be presented in chapter IV.

The available data on the three recreation groups will be utilized to conduct two types of inferences; inverse and universal inference (see Harvey 1969: 247-248). Inverse inference refers to induction from a sample to a population. In the context of this study it will be employed mainly to describe recreation on Pigeon Lake. Universal inference on the other hand connotes induction from a particular population regarding some universe. In this instance the universe could be limited to embrace water-based recreation within the boundaries of the Province of Alberta. However, it is not considered to be within the scope of this study to make such an inference . The emphasis is placed rather on assessing the means which could be employed in such an endeavour.

Due to the priorities in collection of data mentioned above the cottage section dominates the analysis.

III: 2 Cottaging

III:2.1 Introduction

The accuracy of statements derived through inverse inference depends on the reliability of the data. This should not be confused with the precision of estimates of population parameters from a sample, which can be defined as a function of the variance and the sample size. The overall reliability of the cottager sample has already been discussed. In the following presentation of the response to individual questions additional comments on the reliability of the data will be made if warranted.

III:2.2 Origin of Cottagers

The location of Pigeon Lake relative to major population centres in the Province of Alberta is shown in Figure 1. The combined effects of population size and proximity to the lake makes Edmonton dominate as a permanent place of residence of the cottagers (see Table 2). Table 2 also indicates that the overwhelming majority of cottagers come from nearby localities; 93.3% percent live within seventy miles of the lake[1]).

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[1] The impact of distance on the spatial extent of the hinterland of cottage ownership was further substantiated through the interviews. Several of those who purchased their

TABLE 2

ORIGIN OF COTTAGERS

Permanent Place of Residence	Number of Observations	%
Edmonton	92	71.88
Wetaskiwin	8	6.25
Camrose	6	4.69
Calgary	3	2.34
Leduc	2	1.56
Sherwood Park	2	1.56
St. Albert	2	1.56
Thorsby	2	1.56
Devon	1	.78
Edson	1	.78
High Level	1	.78
Ponoka	1	.78
Permanent Residence on The Lake	2	1.56
Rest of Canada and the U.S.	4	3.13
TOTAL	128	99.99

SOURCE: Questionnaire Survey

The importance of different roads as access routes to the Lake cottage is shown in Figure III. On this map it can be seen that the major part of the traffic originating in Edmonton is funnelled via the routes leading to the northern parts of the Lake. This is shown by the fact that the concentration of Edmontonians on the northern shores is higher than on the southern parts of the Lake; 71.71 percent as compared with 62.71 percent. Sabine (1969: 49) suggests that this reflects past differences in the distance from Edmonton to the north and south shores of Pigeon Lake. Since the change in the route of highway #2 these differences have become negligible.

III:2.3 Degree of Occupancy of Cottage

Just over twenty percent (22.66%) of all cottages are used on a year round basis. However, the number of days which these cottages are occupied during the winter season, is very low. In Figure IV, which is based on the whole sample, the restricted use for the winter months is quite pronounced.

Most cottages not in year round use, are being opened up in May. From then on the number of days when the cottage is in use is increasing steadily. By mid- or late June, when schools finish, many cottages are in continuous use until the end of August. In September the use is mainly

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cottage (as opposed to those who built their cottage) reported in connection with question sixteen (B) that the previous owner decided to sell his cottage as a result of moving from Edmonton to Calgary.

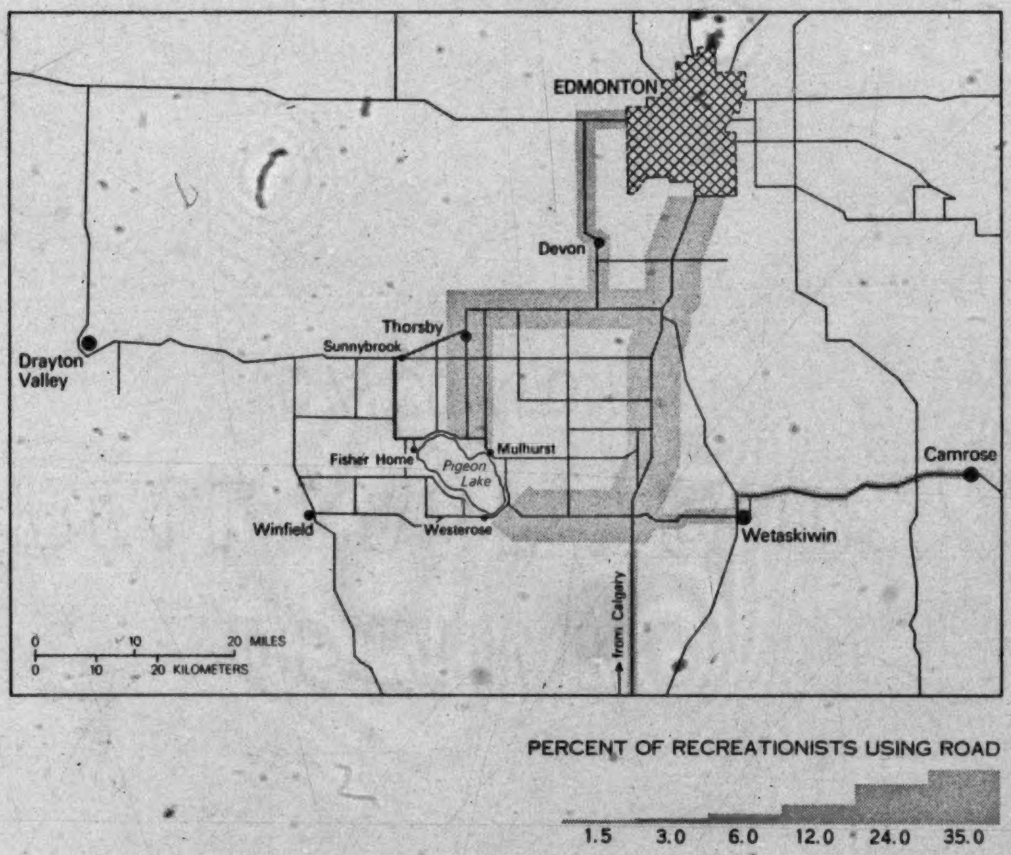

EDMONTON
Devon
Thorsby
Sunnybrook
Drayton
Valley
Fisher Home
Pigeon
Lake
Mulhurst
Winfield
Westerose
Wetaskiwin
Camrose
from Calgary
0 10 20 MILES
0 10 20 KILOMETERS
PERCENT OF RECREATIONISTS USING ROAD
1.5
3.0
6.0
12.0
24.0
35.0

FIGURE III

RELATIVE IMPORTANCE OF DIFFERENT ROADS FOR ACCESS BY RECREATIONISTS TO PIGEON LAKE

SOURCE: QUESTIONAIRE SURVEY, 1973

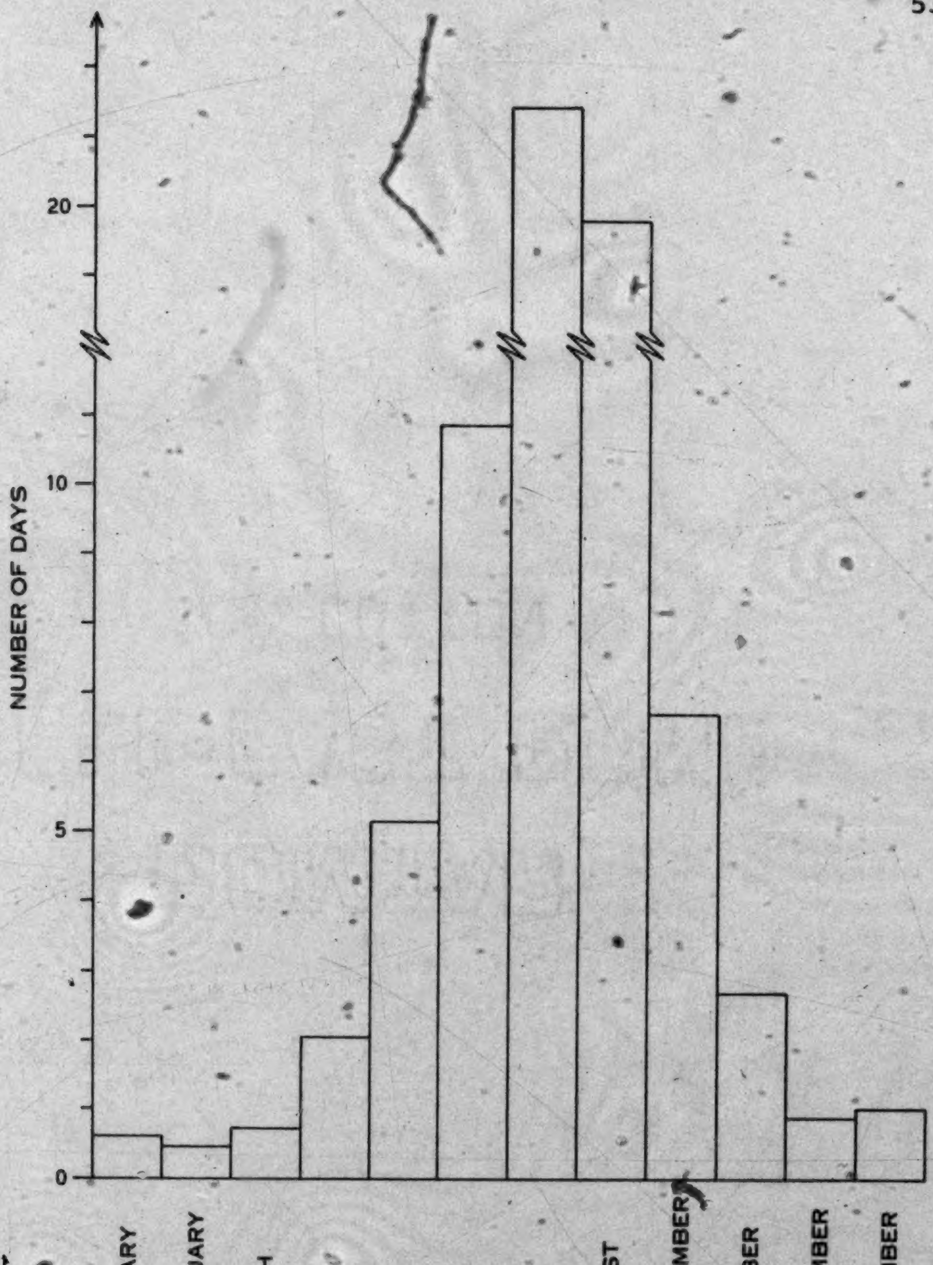


FIGURE IV

DEGREE OF ANNUAL OCCUPANCY OF COTTAGES ON PIGEON LAKE, 1972

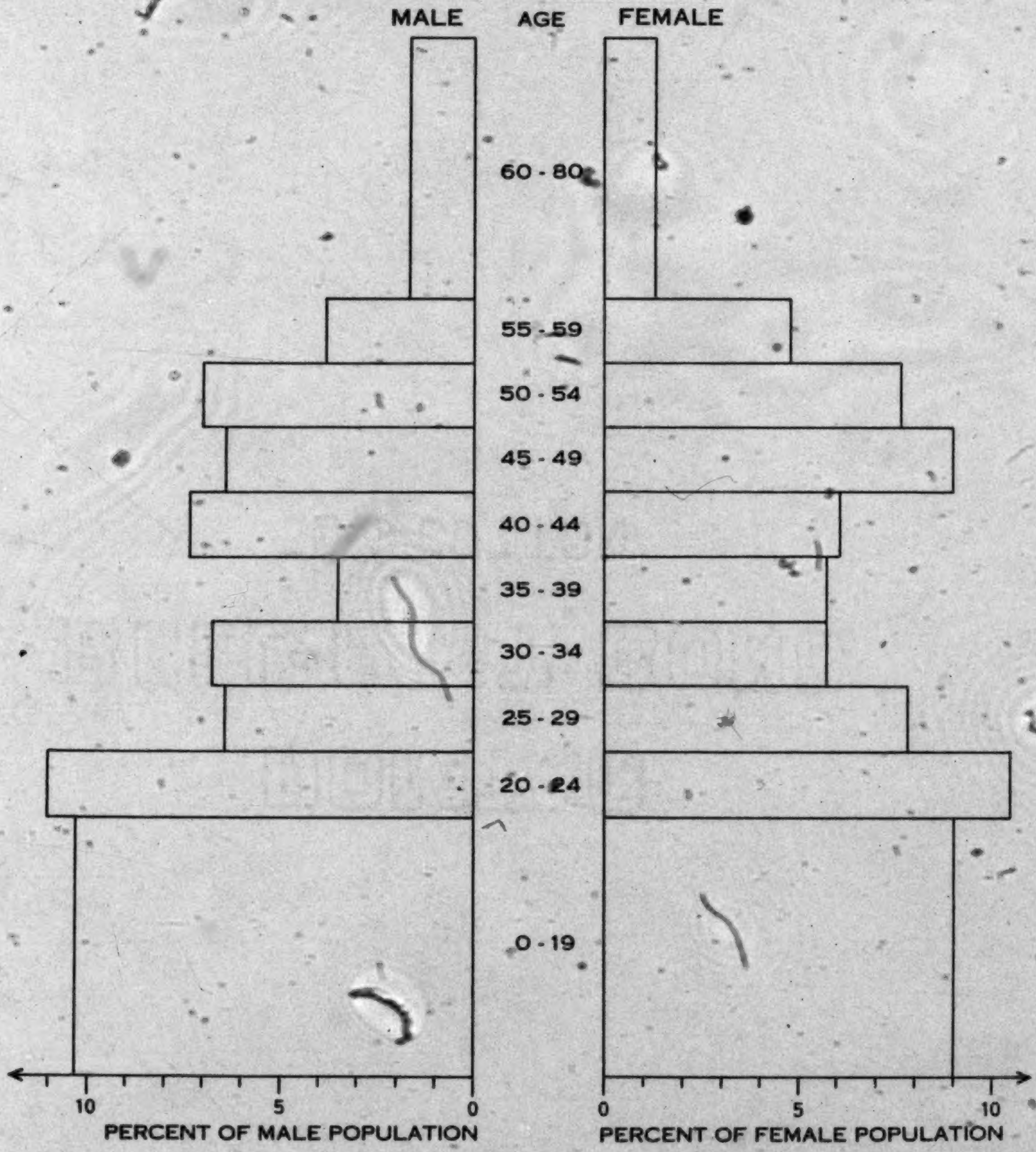
SOURCE: QUESTIONAIRE SURVEY, 1973

confined to weekends. Many cottages are closed then for the winter season which reflects the drop in occupancy rates for October and the following months (Figure IV).

A second measure of the degree of usage is the number of persons staying at the cottage. It is estimated that an average of 5.35 persons are using the cottage on a regular basis. This rather high figure is not as much a result of a predominantly young population (Figure V) as the fact that several cottages are used by more than one family (Table 3). A large portion of the multifamily usage stems from the use of the owner's son(s) and daughter(s) families. Some of it is also attributable to the 7.81 percent of the cottages which are under multifamily ownership or owned and operated by some religious institution.

III:2.4 Recreation Activities Pursued at the Cottage

Scores on participation in twenty-one selected activities were recorded using a three entity classification of "often, occasionally and never" (see Appendix 1, question 12). Cumulative percentage scores for each activity and degree of participation are plotted in Figure VI. This figure can be seen both as a measure of consensus among the population concerning participation in a certain recreation activity and as the popularity of a single activity. A high degree of consensus would thus be indicated by high scores on either rate of involvement.



NOTE: FOR THE PURPOSE OF ILLUSTRATION THE AGE GROUP '60 YEARS PLUS' WAS GIVEN AN UPPER LIMIT OF 80 YEARS OF AGE

FIGURE V'

AGE DISTRIBUTION OF COTTAGER POPULATION, 1972

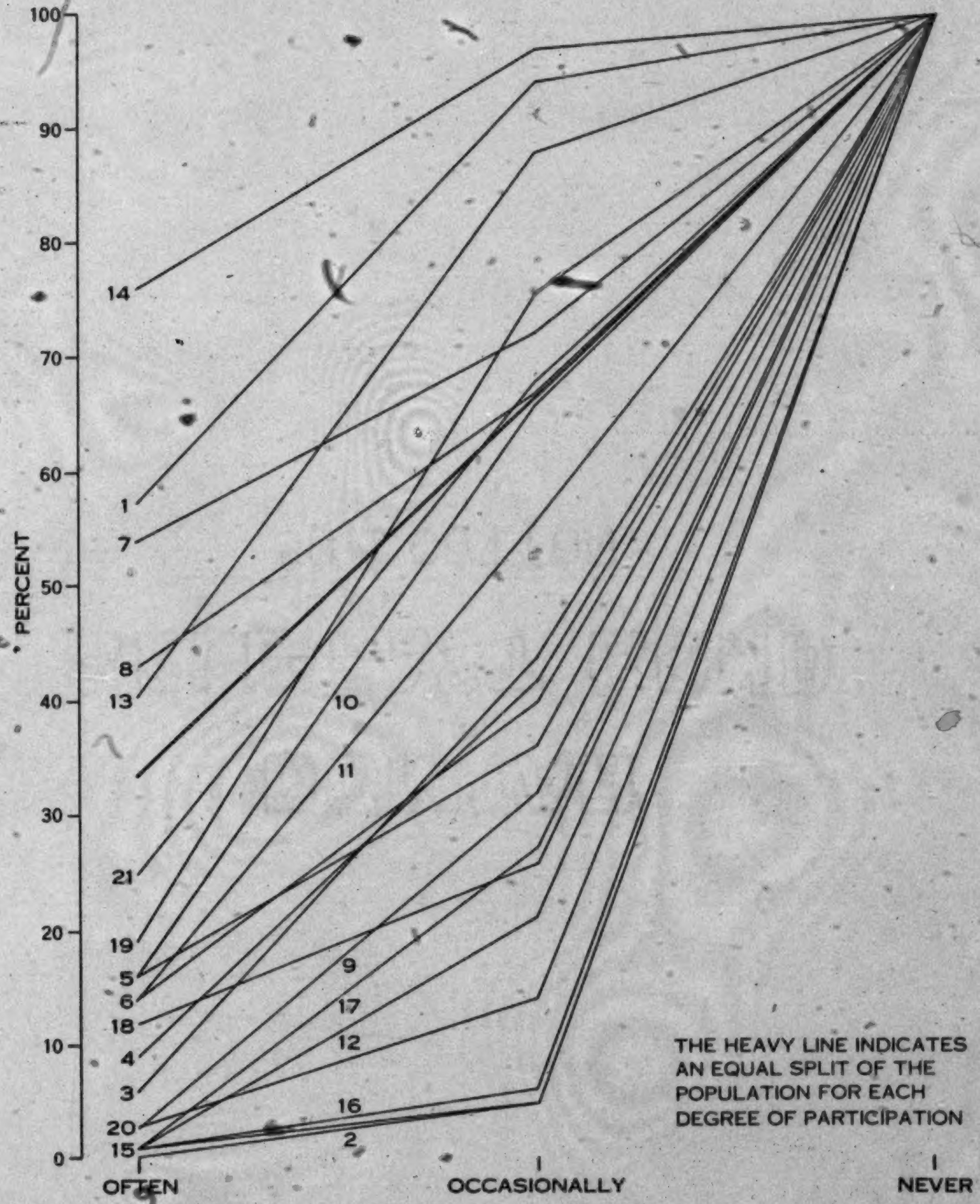
SOURCE: QUESTIONAIRE SURVEY, 1973

TABLE 3

NUMBER OF PERSONS UTILIZING A COTTAGE ON A REGULAR BASIS

No. of Persons	No. of Observations	Relative Frequency
2	25	19.53
3	6	4.69
4	24	18.75
5	24	18.75
6	17	13.28
7	12	9.38
8	8	6.25
9	2	1.56
10	1	.78
11	1	.78
12	3	2.34
13	1	.78
15	3	2.34
18	1	.78
TOTAL	128 ✓	99.99

SOURCE: Questionnaire Survey



NOTE: THE DISTRIBUTION OF ACTIVITY SCORES IS DISCRETE. THE LINES CONNECTING THE THREE ENTITIES ARE ONLY AIMED TO FACILITATE INTERPRETATION AND NOT TO INDICATE INTERMEDIATE LEVELS OF PARTICIPATION

FIGURE VI

DEGREE OF PARTICIPATION BY COTTAGERS IN SELECTED RECREATION ACTIVITIES, 1973

SOURCE: QUESTIONAIRE SURVEY, 1973

Most people are often involved in activity #14; sitting around sunbathing. Swimming, activity #1, rates intermediate between often and occasionally. Walking for pleasure (#13) appears similar to swimming with a score of approximately forty percent each for often and occasionally. Activities pursued mainly on an occasional basis are photography (#19), household hobbies (#21) and golfing (#10). Of the remaining activities, all but motorboating (#7) are divided between occasionally and never. Activities confined to the winter season show a strong consensus for "never" participation, which reflects the low degree of occupancy of the cottage during this season.

Motor boating stands out as an activity on which the population seems to be polarized; just over fifty percent pursue this activity often, but an almost equal share of the population never participates.

III:2.5 Income and Occupation of Cottagers

The cost of building materials and/or the increasingly high cost of lake property makes cottaging a rather expensive form of recreation. The construction of question forty-six A (forty-nine B) partly failed to take this fact into account. From Table 4 it can be seen that just over fifty percent of the sample observations fall into the top income class).[3]

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[3] The income classes used in the questionnaires are the same as the ones used by Whiting (1972) and conform to the intervals employed in the Census.

TABLE 4

INCOME DISTRIBUTION AMONG COTTAGERS

Income Class	Absolute Frequency	Relative Frequency
$3,000	0	0.00
$3,000 - 3,999	5	4.00
$4,000 - 4,999	1	.80
$5,000 - 5,999	4	3.20
$6,000 - 6,999	0	0.00
$7,000 - 7,999	3	2.40
$8,000 - 8,999	6	4.80
$9,000 - 9,999	8	6.40
$10,000 - 14,999	33	26.40
$15,000 +	65	52.00
TOTAL	125	100.00

SOURCE: Questionnaire Survey

The fact that this income class is open ended makes it difficult to estimate an average income of the cottagers. More serious, however, is that it will be rather difficult to evaluate any possible relationships that may exist between income and other variables, such as expenditure.

Despite the inability of question forty-six (forty-nine B) to differentiate the income observations it is apparent that the majority of cottagers earn more than $10,000. per year. This may also be interpreted as a threshhold income which a person must attain before he/she will be established as a cottager.

Of the nine observations indicating an annual income under $6,000., two were cottages owned by religious institutions. In these two cases the income of the respondent has no bearing on the ability to acquire and operate a cottage. Of the remaining seven observations, four consist of persons who inherited their cottage and the other three represent persons who have owned their cottage for more than twenty years.

For the seventeen observations that fall within the range $7,000 to $9,000 all but three (these three observations lie in the interval $9,000 to $9,999) have been owned by the present owner for more than twelve years).[4] The suggestion that there is a threshold income below which cottage ownership becomes exceptional, therefore, seems valid. This suggests also that the income of cottagers would be significantly different and higher than for the Province as a whole. Family income data for the Province of Alberta shows that the average annual income was $9,475 in 1970).[5] To estimate a corresponding average for the cottagers it was assumed that the observations for each income class are represented by the mid-point of that class and that the mid-point for the top class is $20,000. This yielded an average of $15,248 in annual income of the cottagers (this refers to the year of 1972).

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[4] The figure of twelve years represent the mid-point of class four in question three of the questionnaire.

To test whether or not this apparent difference in incomes is significant a chi-square test was used).[6] A chi-square value of 131.18 was obtained. The critical value of the five percent level of significance for nine degrees of freedom is 16.92. It therefore seems safe to conclude that the (average) income of cottagers is significantly higher than for the province as a whole.

The occupational structure of the cottage population reinforces the findings related to income. A presentation of this variable according to the classification systems used by the Census may be in this context not very useful as the census classification focuses on field of employment rather than position held within a particular field (Census of Canada 1971: 109-136). Therefore, a classification using three groups; professionals, highly skilled workers and retired persons, seemed more useful. Professional occupations dominate the picture with 52.76 percent of the total sample or population. Highly skilled workers rate second with 25.98 percent of the total and 14.17 percent are retired. Just over seven percent cannot be classified as falling in any of these three groups. In most of these cases the head of the household is a female without an occupation.

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[5] These are the most recent available statistics, published in Statistics Canada Daily, January 23, 1974, p. 3.

[6] A discussion of the use of the chi-square test can be found in any basic statistics book.

III: 2.6 Cost of Acquiring a Cottage

In order to obtain comparable figures on the cost of acquiring a cottage between the two sub-populations, those who bought and those who built their cottage, questions fourteen B and twenty were aggregated. The distribution of purchasing or building expenditures is presented in Figure VII. The mean expenditure of $5,642.58 for acquisition of a cottage at Pigeon Lake, as estimated from the sample, should not be understood as indicative of present real estate prices. Real estate and no doubt lake property has been subject to a very substantial appreciation

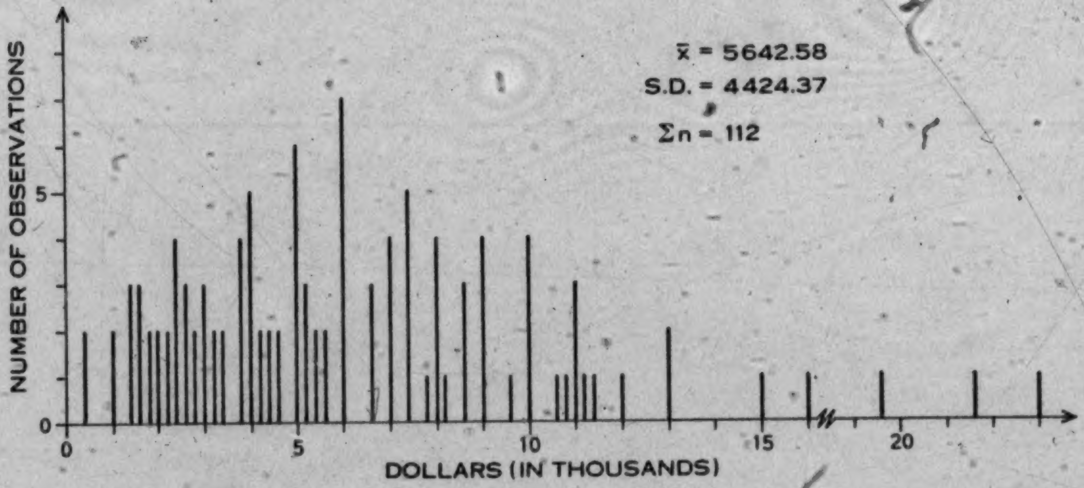

FIGURE VII

PURCHASING OR BUILDING COSTS OF COTTAGES ON PIGEON LAKE

SOURCE: QUESTIONAIRE SURVEY, 1973

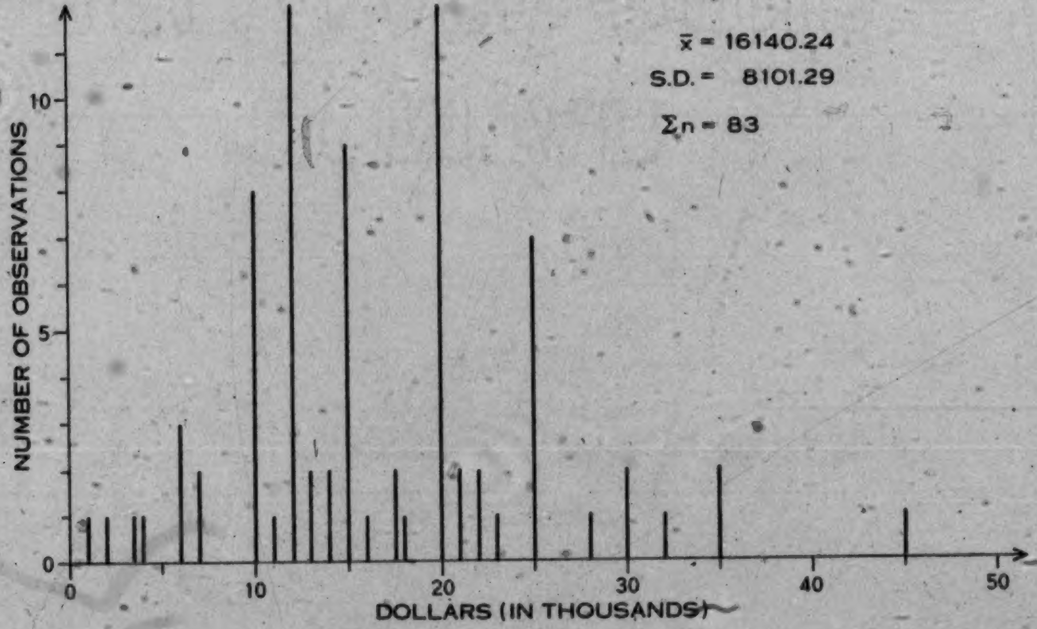

FIGURE VIII

ESTIMATED VALUE OF COTTAGE AND LOT BY COTTAGERS, 1973

SOURCE: QUESTIONAIRE SURVEY, 1973

in recent years).[7,8]

With an increasing demand for lake property and a diminishing supply, at least within close distance of major demand centres, it is likely that prices will continue to escalate. Eighty-two percent of the cottages on Pigeon Lake are situated on lake front property. This situation may further help to boost the property values on Pigeon Lake as new cottage developments are not to occur within 125 feet of any lake shore.

In order to arrive at some estimate of changes in property values on Pigeon Lake the respondents were asked to estimate the value of their lot and improvements (question twenty A or nineteen B) separately. Partly because of the differences in the design of the questionnaires the question pertaining to the value of improvements was missed out on version B of the questionnaires. Unfortunately this discrepancy was not discovered and amended until thirty-six interviews had already been completed.[9]

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[7] An article carried by The Edmonton Journal (May 25, 1974, p. 77) entitled "The Appeal of a Summer Cottage" may illustrate this situation. It reports that .... "the average price (for a cottage) is around $10,000-$12,000, higher even for lake front property". In the same article a cottage owner at Norris Beach .... "estimates that the value of his property .... on Pigeon Lake has doubled in value in the past four years".

[8] The beach of Vasa Club, located between the beaches of Golden Days and Johnsonia, constitutes an anomaly with regard to appreciation of land values. The beach is owned by an organization of Scandinavians and is open for members only, who can lease a cottage lot on a long term basis at a nominal fee.

[9] Sixty-seven version B and sixty-one version A of the questionnaires were completed.

A general impression of the responses to questions twenty A and nineteen B was that the interviewees had some difficulty in producing an estimate of the value of their property. Many cottagers expressed that they had never considered selling their cottage, and therefore did not have a good conception of the present value of the property. It was therefore common that estimates came to be based on some recent sale of a cottage in the vicinity of the respondent's cottage. This may have contributed to the bunching of observations to certain values as it appears in Figure VIII. Without considering the time of purchase/ building of cottage a comparison between Figures VII and VIII clearly indicates that property values have increased substantially.

III: 2.7 Investments in Cottage

For analytical purposes investments in cottages were separated into three groups; repairs, improvements to the cottage, and improvements of the cottage lot. The distribution of expenditures for these types of undertakings are shown in Figures IX to XI. For ease of presentation zero observations are not plotted in these figures but stated in writing.

Almost sixty percent (57.94%) reported no expenditures at all for repairs. This of course makes the overall average of $387.70 spent on repairs somewhat misleading, as those who

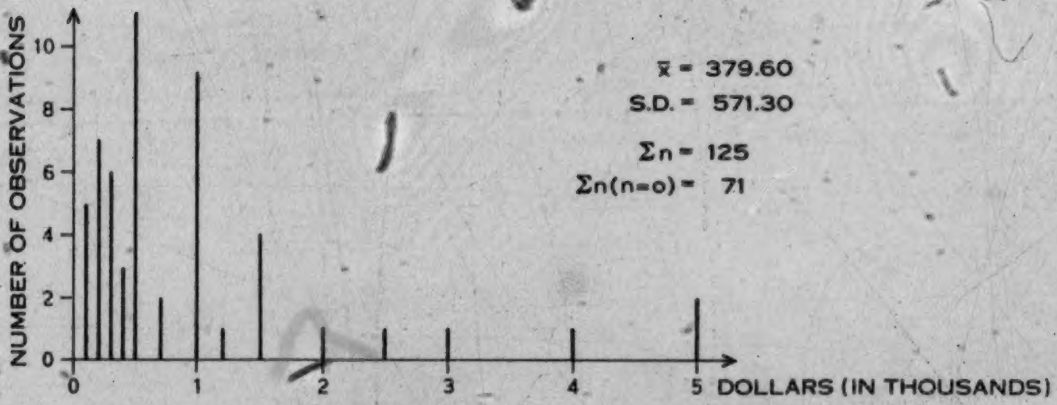

FIGURE IX REPAIRS TO COTTAGE

SOURCE: QUESTIONAIRE SURVEY, 1973

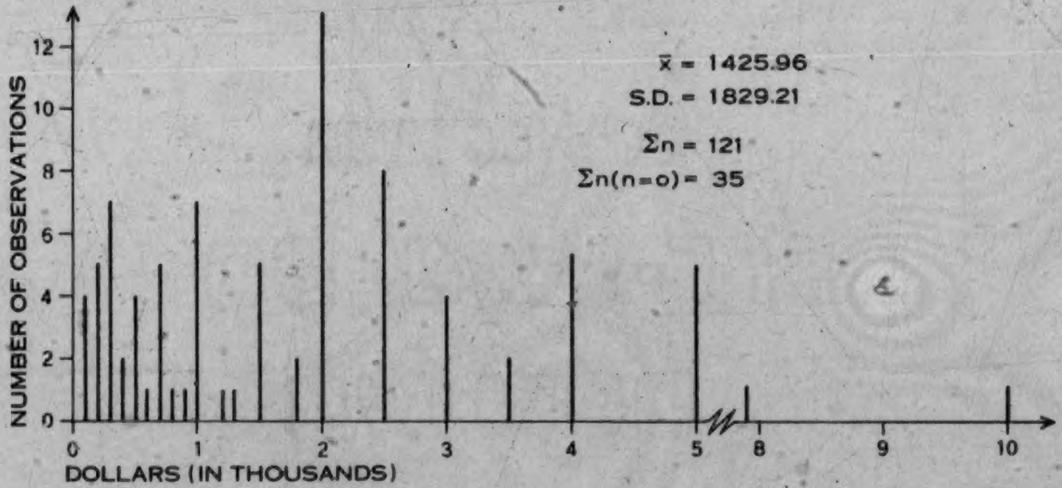

FIGURE X IMPROVEMENTS TO COTTAGE

SOURCE: QUESTIONAIRE SURVEY, 1973

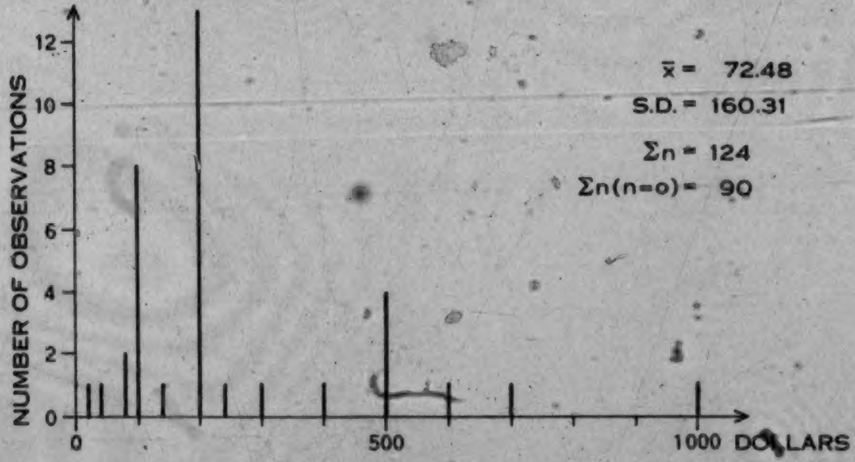

FIGURE XI IMPROVEMENTS TO LOT

SOURCE: QUESTIONAIRE SURVEY, 1973

undertook to repair their cottage spent an average of $921.70.

Approximately seventy percent (71.31%) have spent some money on improving their cottage. Calculating the average over the whole sample this yields an average of $1,414.30 (excluding zero observations; $\bar{x}$ = $1,983.20).

Less than one-third (29.57%) indicated any expenditures for improvements to the cottage lot. The average for the whole sample is $71.30 but it is $249.60 when those who had not incurred any costs are excluded.

III:2.8 Value of Furnishings and Outdoor Equipment

The value of furnishings in the cottage (questions twenty-six A and thirty B) is an estimate by cottagers of the market value of appliances and furniture kept permanently at the cottage. It is quite common that part of the furnishings are replacements or surplus goods from the owner's permanent residence.

In cases where surplus materials are moved to the cottage this represent an increased utility rather than an extra cost to the cottager. Whether or not replacement furnishings should be considered utility or cost to the cottager is not equally clear. It could be suggested that the propensity to purchase new goods for the permanent residence would increase when the used equipment can be utilized at the cottage. Then cottage ownership would have an economic trigger effect, inducing the cottage owner to incur costs they would not otherwise have done.

From a spatial economic impact point of view this is particularly interesting as a recreation resource thus could create an economic impact elsewhere.[10] It is however outside the scope of this study to evaluate this impact. The focus here is on expenditures associated with the acquisition of goods specifically for the cottage.

The estimated value of furnishings as opposed to actual expenditures is shown in Figures XII and XIII respectively. From this it was deduced that on the average 78.2 percent were purchased specifically for the cottage. Expressed in monetary units this represents an average expenditure of $1,111 as compared with an average of $1,439 total worth of furnishings in the cottage.

Another major capital asset apart from the cottage itself and furnishings is outdoor equipment. The type of expenditures which are of interest to this study for outdoor equipment are those in which cottage ownership played an important role in decisions of acquisition. In some cases it would probably be difficult to assess the importance of this factor. However, to establish a measure of this variable the respondents were asked to include only things which are

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[10] Several cottagers whose permanent residence was other than Edmonton indicated that they preferred to go to Edmonton when replacing old furnishings at home rather than buy locally.

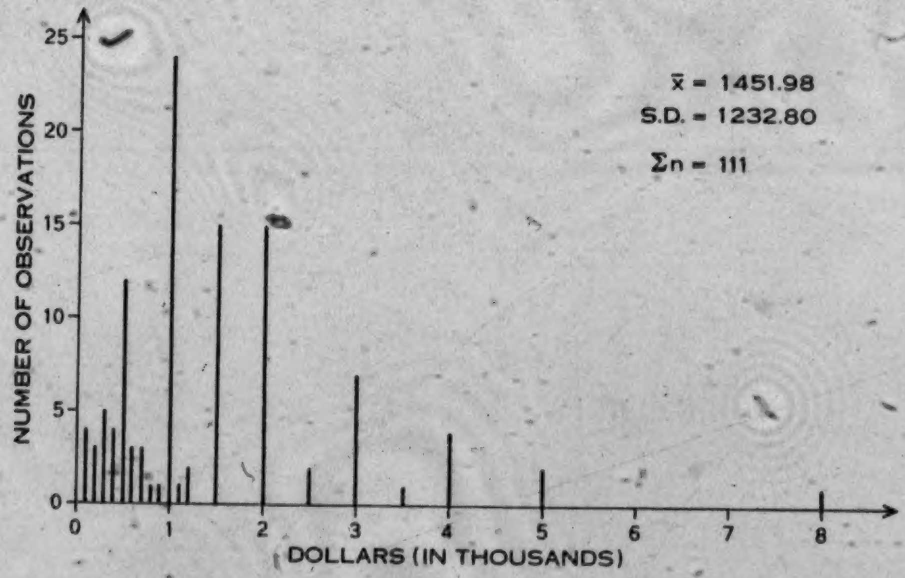

FIGURE XII

ESTIMATED VALUE OF FURNISHINGS OF COTTAGES

SOURCE: QUESTIONAIRE SURVEY, 1973

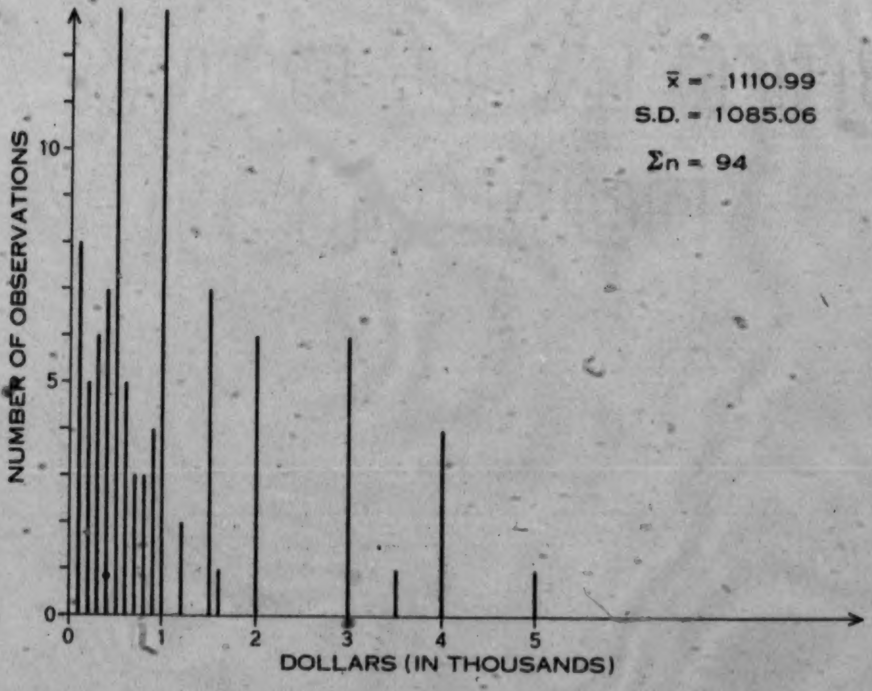

FIGURE XIII

ACTUAL EXPENDITURES FOR FURNISHINGS OF COTTAGES

SOURCE: QUESTIONAIRE SURVEY, 1973

used mainly at the cottage.

In Figure XIV it can be seen that the range of values of equipment is quite considerable being from $0. to $9,200. The average expenditure is $1,778.

III:2.9 Expenditures on Up-Keep of Cottage

The distinction made between major repairs and up-keep refers more to the type of undertaking than the actual cost of such an undertaking. Generally speaking major repairs will involve probably a greater outlay of money than will normal mainenance. However, certain maintenance jobs like painting, can imply quite substantial costs. As can be seen in Figure XV nine cottagers (7.2%) reported expenditures between $300 to $500. On the other hand almost thirty percent (28.8%) indicated no expenditures at all. The average expenditure is estimated to be $88.60.

III:2.10 Taxes

Summer villages levy their own taxes. This means that taxes paid per assessment dollar are not necessarily the same around the lake. Taxes also vary depending on the number of days per year which a cottage is occupied. Those who use the cottage less than 120 days per year and do not rent out the cottage are entitled to a so called recreation deduction. This deduction amounts to what is otherwise paid in school tax. The distribution of taxes is shown in Figure XVI. Apart from one extremely high value and a few quite low values the

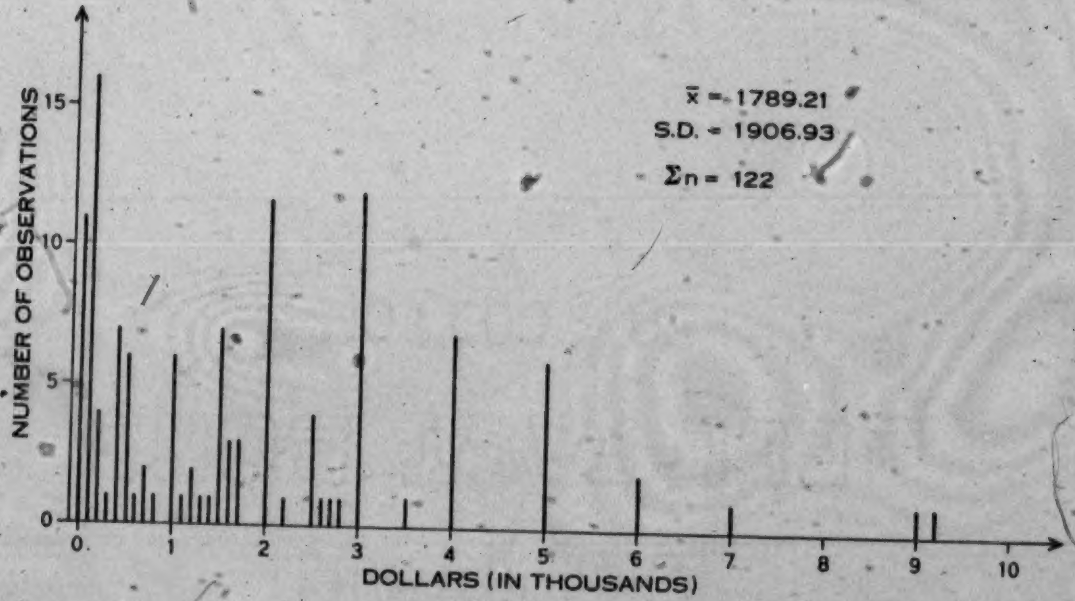

FIGURE XIV

EXPENDITURES FOR EQUIPMENT AT COTTAGE

SOURCE: QUESTIONAIRE SURVEY, 1973

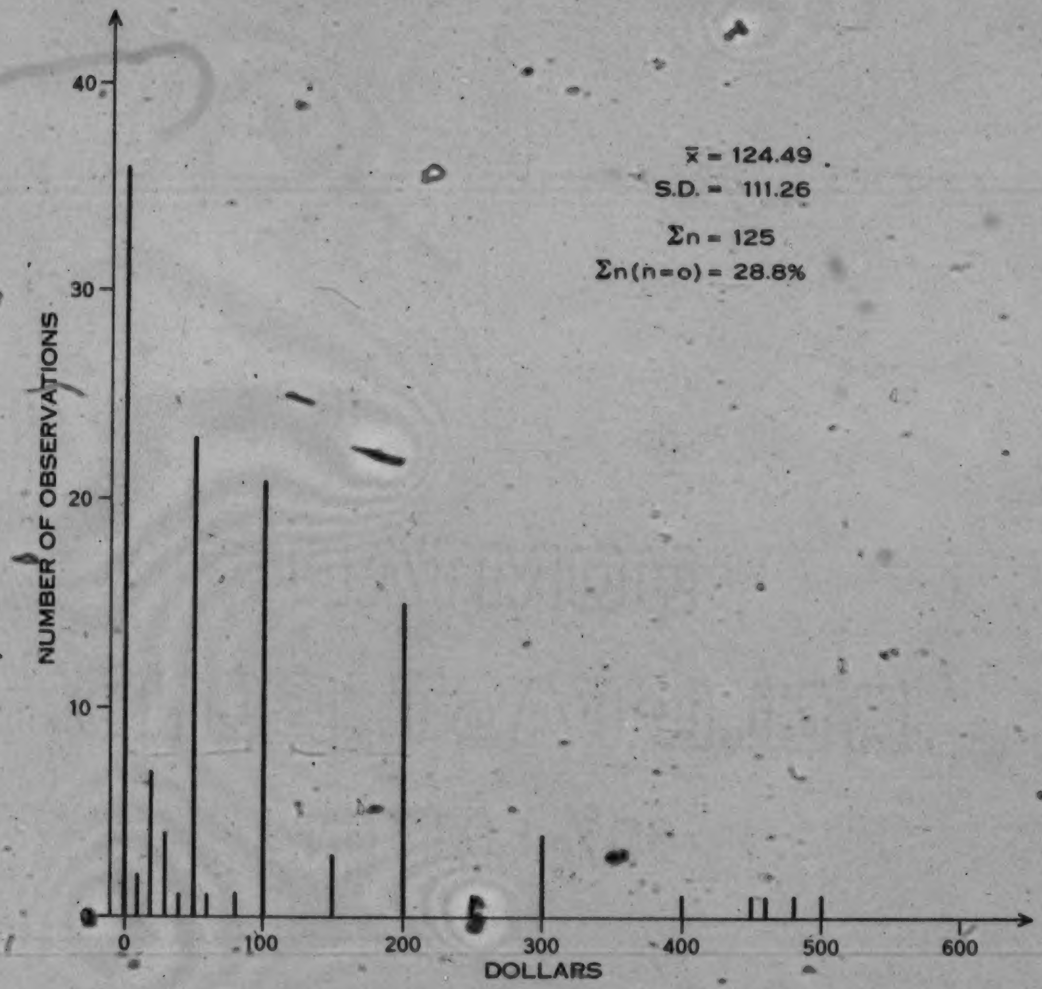

FIGURE XV

ANNUAL EXPENDITURE FOR UP-KEEP OF THE COTTAGE, 1972

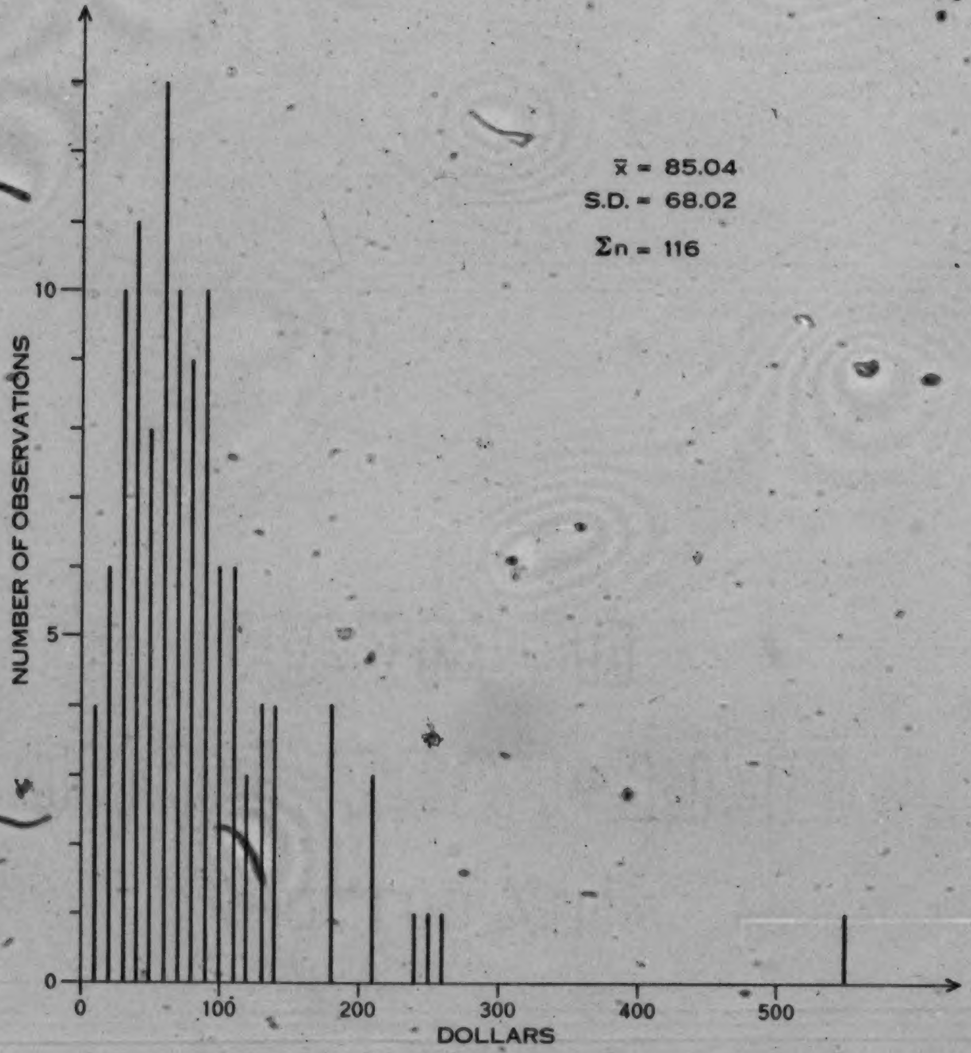

FIGURE XVI

ANNUAL TAXES PAID BY COTTAGERS, 1972

SOURCE: QUESTIONAIRE SURVEY, 1973

distribution appears quite well centred around the average of $85.04.

III:2.11 Utilities

Utilities basically comprise electricity and gas or any other fuel. The cost of utilities will obviously depend on several factors, such as number of days the cottage is in use, season, number of people using the cottage, type of appliances used in the cottage and the size of the cottage. From Figure XVII it can be seen that while the distribution is positively skewed almost ninety percent (89%) of the observations fall within the range $0. to $100. with an average of $63.05.

III:2.12 Insurance

Only about fifty percent (50.78%) of the respondents could produce any figures with regard to cost of insurance of the cottage and other related property. The main reason for this drop in the response rate is the nature of most cottager's insurance policies. Thus, most cottager's insurance policies run over a three year period and include most of the cottager's property. It is therefore understandable that many respondents encountered difficulties in producing a figure that excluded insurance costs for property other than the cottage. The distribution of insurance costs is presented in Figure XVIII.

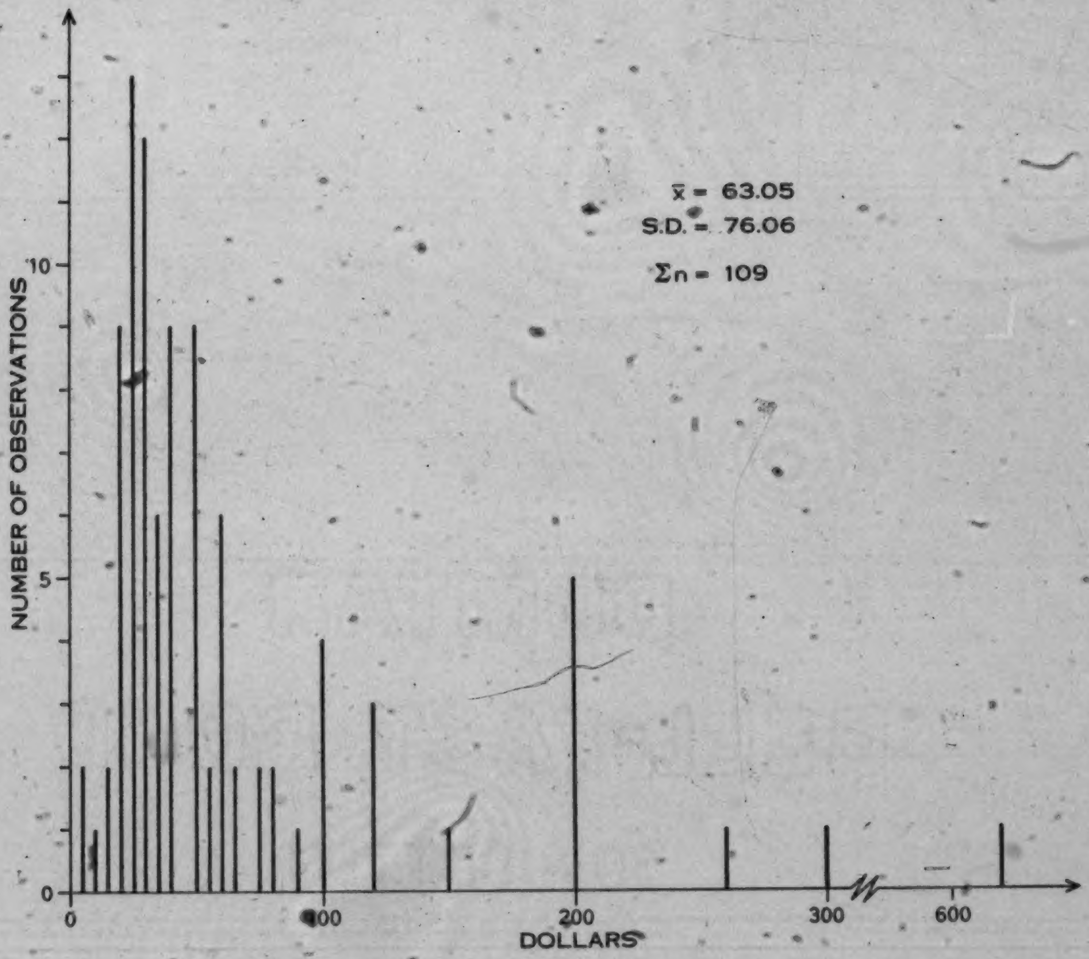

FIGURE XVII

ANNUAL UTILITY PAYMENTS BY COTTAGERS, 1972

SOURCE: QUESTIONAIRE SURVEY, 1973

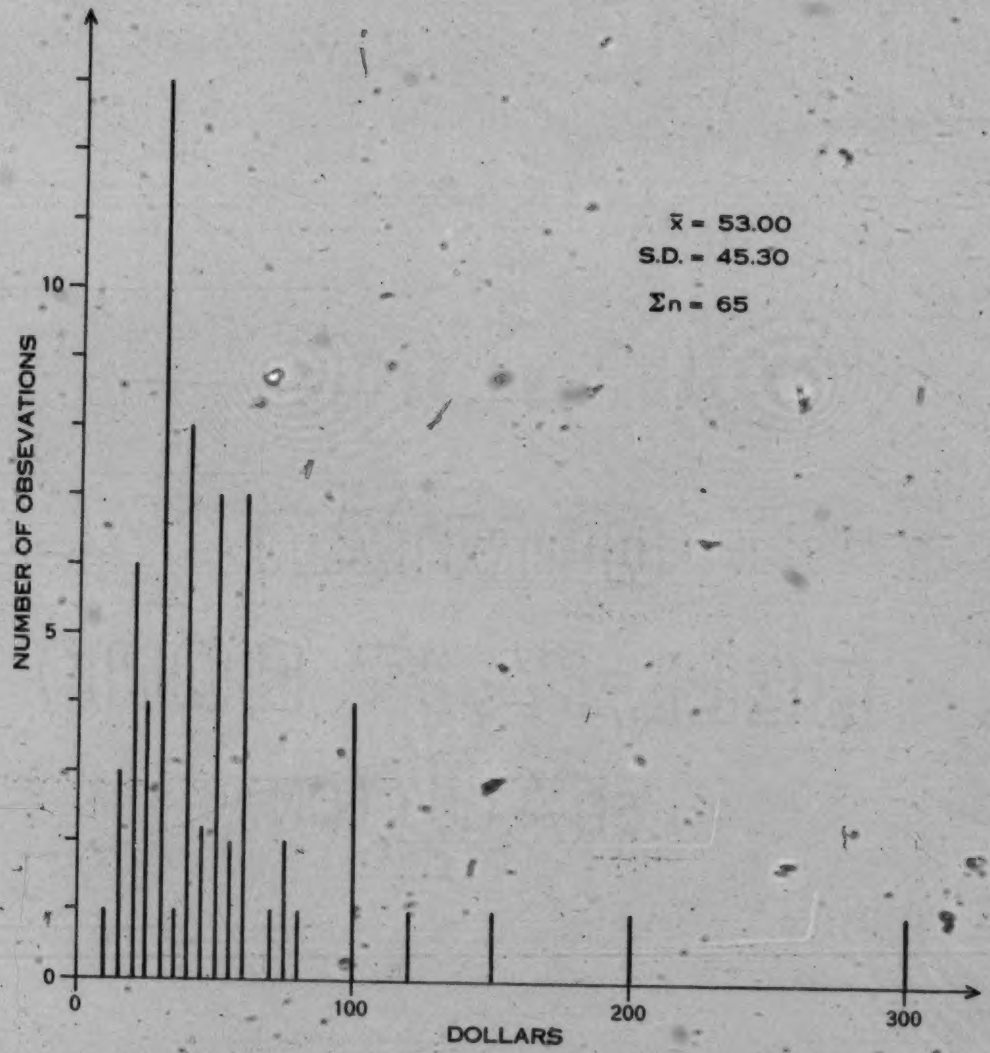

FIGURE XVIII

ANNUAL COST OF INSURANCE PAID BY COTTAGERS, 1972

SOURCE: QUESTIONAIRE SURVEY, 1973

The average cost of insurance is $51.46. The rather high non-response to this question (forty-eight A, forty-two B), however, makes the reliability of this estimate somewhat questionable.

One aspect of the reliability of the information presented so far that deserves some attention concerns the estimates of expenditures by cottagers. It is conceivable that people tend to round values off. The discrete character of the right hand tail of the distributions would suggest that if rounding off takes place the extent of this, measured in absolute terms, increases with increasing amounts to be estimated. Whether this would be consistent up-ward or not, is impossible to ascertain. Without any proof it will be assumed that any rounding off will not significantly change the true value. At any rate it seems difficult to see how this possibility could be taken into account.

III: 3 A Framework for Universal Inference

Certain properties of cottaging on Pigeon Lake exhibit features which render it unique. Pigeon Lake itself for example is the only lake on this planet with that location. At the same time, however, it is only one of several lakes located within the recreation demand zone of Edmonton, giving it an attribute of generality.

The major task in assessing the generality of the findings of this study will be to analyze and evaluate the internal variation of the data. This may be expressed more explicitly using an example. Thus, assume that the variable income shows a very strong relationship with the amount of money a cottager spends on cottaging. This relationship measured as a correlation coefficient, when squared, indicates how much of the variation in expenditures is explained by income. If this is then inserted into a regression equation of the form $Y = a + bX$;[11] where Y is expenditures on cottaging and X is income; we have a model that can be used to make inferences about some defined universe.

The usefulness of this model for estimation or prediction of certain parameters in the universe or other samples of that universe, ceteris paribus, depends on how much of the variation in Y that is explained by X (X may in itself be more than one variable).

Extrapolations from a population to a universe rest on the assumption that whatever variable(s) is taken to explain a certain degree of variation in a dependent variable this variable(s) will retain this property when inferences are to include the whole universe).[12] The validity of this assumption will probably decrease as the universe is expanded.

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[11] For sake of simplicity the relationship is assumed to be linear.

[12] In the above example income was used as a proxy variable for the propensity to spend money on cottaging. The use of proxy variables usually stems from the difficulties in measuring the approximated variable(s). However, the use of proxy variables makes the model more vulnerable, as changes in the background variables might occur without a similar change in the proxy variable.

In the context of this study the universe could be tentatively defined as cottaging in the Province of Alberta. Thus limited it seems safe to contend that the assumption discussed above is satisfied.

In an attempt to construct a model which could be employed to estimate the size of monetary flows elsewhere generated by cottaging, the focus of interest will be placed on analyzing the variance in expenditure data for cottaging on Pigeon Lake. This model can be expressed as a regression function $Y = (f(x) + \alpha$; where Y, expenditure variables, is treated as a function of certain variables x and a stochastic error term α.

Three sets of x variables; socio-economic, usage characteristics, and physical quality of beaches, will be investigated as possible sources of variation in Y.

III: 3.1 Socio-Economic Variables

Socio-economic data were gathered for three variables; income, age and family size. The main reason for incorporating these variables in an analysis of variance (in expenditures) is that these variables are relatively easy to measure. From a practical point of view, that is assessment of expenditures generated by other cottage developments (be it actual or potential), it is useful, therefore, to evaluate the ability of these proxy variables to explain variation in expenditures.

III:3.1.1 Income -X_1

Some of the discrepancies in the measurement of this variable have already been discussed. However, to make this information operational the mid-point of each class is used as representative for that class. In the case of the open ended class a mid-point value can only be suggested. The soundness of the assumption that all observations within a class coincide with, or at least are very close to, the mid-point value is indeed questionable. If this assumption is not satisfied the ability of income to explain variation in expenditures may be underestimated.[13] The quality of available data on income does not lend itself to such an analysis but these aspects should be borne in mind when interpreting the significance of subsequent results.

To formulate a hypothesis concerning the relationship between income and expenditures some additional aspects of the income variable should be considered. Thus, purchasing and retaining the ownership of a cottage involves certain fixed costs.[14] This has already been discussed above as a threshold income below which cottage ownership is rare and exceptional. As income increases above this threshold it would seem reasonable to suggest that the relationship between income and expenditures would decrease in strength. This argument rests on the proposition that when income increases beyond what is necessary to meet the fixed costs involved in cottage ownership, the propensity to incur additional costs will be subject more to personal preferences than income. It is also conceivable that high income cottagers will allocate parts of their income to other forms of recreation.[15]

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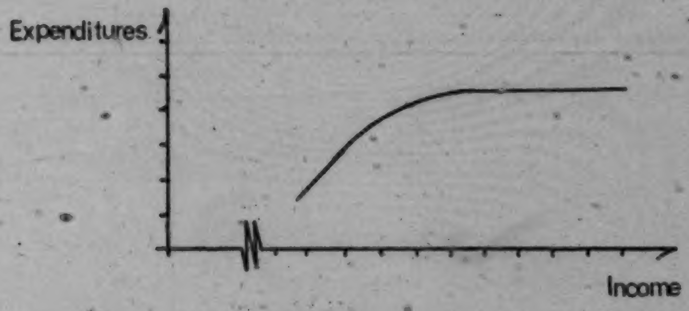
[13] A linear relationship will be underestimated. It is also possible that a non-linear relationship will be disguised as linear (with a significant non-zero slope).

[14] The fixed costs should not be interpreted as a single fixed value, but as a distribution of values. Fixed costs of cottage ownership could therefore be specified as a confidence interval for some average value. It may not be of much use to attempt to specify such an interval as it is subject to considerable change up-ward over time. The rapid

In terms of a regression function this means that a function where the slope of the curve is significantly non-zero for incomes close to the threshold, then decreasing approaching zero slope for higher incomes should be anticipated (see Figure below).



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increase in property values plus inflation, may in fact alter the average fixed costs to the extent that income groups, which had access to the cottage market at the time of this study will be excluded in the near future.

[15] For sake of simplicity additional usage of disposable income is here limited to recreational purposes.

To operationalize the above hypothesis concerning the relationship between income and expenditures, the commonly employed bi-valued construct of hypotheses, where one is proven false and the other true, may not be particularly useful. If the above reasoning holds, which cannot be discerned very well with the available data, then the explained variation in expenditures will be relatively small. Despite its relative insignificance (R^2 eg. less than 10%) it may still be statistically significant. However, before turning to statistical testing, hypotheses concerning the other x variables will be discussed.

III: 3.1.2 Age - X_2

Age data was obtained for all individuals using the cottage regularly. To operationalize this variable age is defined as an average age of all persons using the cottage. Problems may arise from this definition if the age of the head(s) of the household is more important than the age of children. There is, however, no evident reason that the age of the household head(s) should be allotted any extra importance. It is also difficult to decide who should be regarded as the head of a household when more than one family is using the cottage.

It could be argued that the propensity to spend money on cottaging would increase with increasing age up to a certain age and then probably decrease again. Cottagers in the early part of the family cycle will exhibit probably a relative low propensity, partly due to having other financial commitments but also due to a low demand for recreation among the children. When the children reach the early teens, the propensity to incur costs for the family, probably approaches its peak. At this stage all members of the family have pronounced interests in recreation which undoubtedly will have certain repercussions on expenditures. As age increases further the propensity to spend money on cottaging will decrease likely not only because facilities have been accumulated over the years, thus eliminating the need to acquire many things, but also because older people will more likely indulge in less expensive recreational activities.

When the time of purchase is added to the above argument it would be logical to suggest that those who acquired a cottage close to retirement will spend overall less money. For most of the expenditure variables ($Y_1 - Y_5$); one would expect to obtain a function similar in shape as the one suggested for income. This results from the aggregated measure of these expenditure variables. It is, however, the author's contention that even if the method of least squares were applied to this function it would not yield a significant result as other variables are the main contributors to the variation in expenditures. The hypothesis concerning the effect of age on expenditures would thus state that there is no relationship between these variables.

III: 3.1.3 Family Size - X_3

This variable, (at least) when combined with the number of days of occupancy, ought to have a positive relationship with the amount of money spent on food and durable goods. With regard to expenditure variables discussed in the early part of this chapter, suggestions that a larger family should need more of everything and thus spend more are probably not valid. The assumed low propensity among young families to incur costs would reduce the effect of family size. Similarly, the very large households (Table 3) will probably also counteract the effect of family size as it is common that these multi-family households take turns in using the cottage. Consequently the relationship between family size and expenditures is expected to be insignificant.

III: 2 Characteristics of Use

In the discussion of socio-economic variables it was suggested that personal preferences may be a much more powerful variable in explaining the variance in expenditure variables.

The hypothesis entertained concerning personal preference is that cottagers attach different values (some non-monetary) to their access to a cottage. This variable is probably also independent of other variables such as the ones discussed above. Furthermore, the more valuable a cottager regards his access to a cottage, the more money he will be inclined to spend on this type of recreation.

A rigorous investigation of the relationship between personal preferences and expenditures is beyond the scope of this study, the main reason being the difficulties in establishing a measure of this variable. However, the information collected on participation in some twenty-one recreation activities could be seen as some proxy variable for personal preferences. This is based on the supposition that those who value their cottage higher will have a higher participation score for these activities.[16]

The activity variable was operationalized by calculating a total score for all activities for each observation. This was then expressed as three variables; X_4 = the score for "often" (see Appendix, question 12); X_5 = the score for "occasionally"; X_6 the combined score of "often" and "occasionally". The fact that most activities display a low score for "often" suggested that it could be of interest to study the combined effect of variable X_4 and X_5.[17,18]

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[16] It would seem reasonable to propose that the more valuable a cottager regards his cottage the more intensively will he utilize this asset and as a result the more inclined to spend money he will be.

[17] Variable X_5 will be used primarily for control purposes.

[18] A more refined semantic differential would have allowed for a more stringent treatment of the proposed

A fourth variable pertaining to the use of the cottage, number of days of occupancy (X_7), is assumed to be of less importance with regard to the generation of expenditures (see discussion of family size above). It could be claimed that this variable ought to have a positive relationship with certain expenditure variables, such as taxes and utilities. With respect to other expenditure variables, however, this variable is not expected to be of significance as a high degree of occupancy is not necessarily correlated with high personal valuation of the cottage.

III:3.3. Physical Quality of Beach X_8

The importance of this variable, should it have any relationship with expenditures, is rather obvious; lakes with poorer quality beaches would generate less expenditures and vice versa. However, it seems difficult to present an argument that could satisfactorily furnish a framework to construct a hypothesis concerning any relationship between this variable and expenditures.

A high quality beach would no doubt produce a higher price on the market for a cottage than would a low quality beach.[19] In the case of Pigeon Lake the high quality beaches were developed at a fairly early stage. The prices paid for these cottage lots would probably be lower than

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relationship between this variable and expenditures.

[19] Methods of evaluating beach quality have been discussed by Sabine (1969).

today's prices for beaches of lower quality, even when changes in the value of the dollar are taken into account. At any rate this would have only an effect on the total building costs.

Another aspect of beach quality which could be of relevance is if this factor plays any major role in a person's decision where to locate on a lake. It could be proposed that persons who attach a high value to their potential cottage would prefer a higher quality beach even if this would imply a higher cost. The historical development of cottaging on Pigeon Lake as well as present demand for even relatively low quality beaches, will nullify probably this proposition.[20] Prospective cottagers now face a much more limited choice where to locate as compared with what their counterparts did, say, twenty years ago. The hypothesis therefore states that there is no significant relationship between beach quality and expenditure.

III: 3.4. Test of Hypotheses

Hypotheses were tested by establishing a correlation matrix including the relevant variables. The correlation matrix is also useful from an explorative point of view as it will shed light on the degree of intercorrelation between variables.[21] This will help then in establishing a regression model as well as to make it possible to discern the independence of certain variables as suggested above.

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[20] The historical development of cottaging on Pigeon Lake has been dealt with by Stewart (1970).

[21] The use of a correlation matrix to explore intercorrelation between X-variables is particularly useful when

To test the significance of hypotheses using correlation analysis, certain prerequisites of the data should be met. Aldskogius (1968: 123) has specified these prerequisites as being that the studied variables consist of independent observations, which are at least approximately normally distributed and that the relationship between the variables is linear.

The assumption about linearity applies as the analysis will be limited to the investigation of linear relationships.[22] The requirement of independency is assumed to be satisfied. Perhaps more crucial is the requirement of normality of the variables. The necessity of normality or at least approximately normal distributions, is attributable to the fact that the most commonly used tests of significance are based on the probability distribution pertaining to the normal curve. It is therefore important that this condition is met.

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hypotheses are tested within a framework of a stepwise multiple regression analysis. This has been discussed by Aldskogius (1968: 147). In the context of this study, provided the hypotheses are not rejected, any regression model will be limited to incorporate one or two x variables, which will reduce the problems of multicolinearity.

[22] The validity of the assumption concerning linearity can at least partially be assessed through an inspection of scatter diagrams.

The distribution of expenditure variables shown in Figures VII to XVIII, perhaps with the exception of taxes, do not appear congruous with the shape of the normal curve. In case a distribution is not normal there are ways of transforming it to approximate the normal distribution (see Haggett 1970: 288). To ascertain the normality of the study variables a square root and log transform was conducted. This was however limited to the expenditure variables. The x variables are already grouped and the transform therefore does not make sense.

There are several methods of testing how well a particular distribution resembles, in this case, the normal distribution. The method used here involved a chi-square test utilizing the normal curve to derive the expected frequencies.[23] The results of these tests are summarized in Table 5.

Considering the requirements on the data for correlations and regression analysis the results in Table 5 are somewhat discouraging. Only three of nine Y variables;

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[23] The expected frequencies for the expenditure distributions were derived by setting up ten classes each, except for the two tail classes, comprising ten percent of the area under the normal curve. Taking ± two standard deviations of the normal curve the expected frequency of the two end classes is .075 times n. The advantage of this method is that it eliminates the need for collapsing classes having an expected frequency of less than five observations. The expected frequency for the X variables was derived by calculating "z-scores" ($z = \frac{x - \bar{x}}{s}$).

TABLE 5

TEST OF NORMALITY OF SELECTED VARIABLES X AND Y

I	II	III	IV	V	VI	VII
Purchasing/ Building Costs	(Y_1)	8.32	14.07	x		$\sqrt{x}$
Repairs	(Y_2)	342.00	14.07		x	$\sqrt{x}$
Improvements	(Y_3)	54.72	14.07		x	$\sqrt{x}$
Furnishings	(Y_4)	12.74	14.07	x		log
Equipment	(Y_5)	17.98	14.07		x	$\sqrt{x}$
Up-keep	(Y_6)	107.27	14.07		x	$\sqrt{x}$
Taxes	(Y_7)	10.38	14.07	x		log
Utilities	(Y_8)	17.51	14.07		x	log
Insurance	(Y_9)	16.16	14.07		x	log
Income	(X_1)	28.27	14.07		x	-
Age	(X_2)	23.49	14.07		x	-
Family Size	(X_3)	67.75	14.07		x	-
Activities Often	(X_4)	6.23	11.07	x		-
Activities Ocasionally	(X_5)	7.08	12.59	x		-
$X_4 + X_5$	(X_6	7.69	15.51	x		-
No. of Days of Occupancy	(X_7)	6.91	15.51	x		-
Beach Quality	(X_8)	-	-	-	-	-

I: Variable

II: Label of Variable

III: Calculated Chi-Square Value

IV: Critical Value

V: Acceptance of Variable as Approximately Normal

VI: Rejection of Variable Being Approximately Normal

VII: Type of Transform Used

purchasing or building costs (Y_1), furnishings (Y_4) and taxes (Y_7); can be assumed to be approximately normal. The very high chi-square values for repairs (Y_2), improvements (Y_3) and up-keep (Y_6) is a reflection of many cottagers reporting no monetary outlays for these variables. The remaining Y variables are relatively close to the critical value at the five percent level of significance, being however too high to be accepted.[24] Among the X variables only X_{4-6} and X_7 can be assumed to be approximately normal.

The non-normal properties of the majority of the selected variables constitute a major problem, ceteris paribus, as the significance of correlation coefficients cannot be ascertained utilizing the properties of the normal curve. To achieve a solution to this problem a series of contingency tests were performed of those variables which do not meet the requirements of normality. This was however limited to include pairs of variables of Y and X only, as the intercorrelation between Y and X variables respectively only is of minor interest. The contingency test investigates within the framework of probability whether or not any two variables are dependent or independent. In the case of the subsequent correlation analysis this will allow then to interpret the significance of correlation coefficients in cases where the requirements of tests based on the probability function of the normal curve are not satisfied. The results of the contingency tests are presented in Table 6.

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[24] The main reason for choosing the significance level of 5% is that it is regarded more serious to accept a non-normal distribution as normal than vice versa.

The hypothesis concerning the physical quality of beaches was initially intended to be tested by first stratifying the total sample into subsamples on the basis of beach quality and then testing whether or not the correlation coefficients for the subsamples differed significantly from each other. However, as a result of the distribution properties of most of the study variables and the time requirements to conduct this analysis it seemed justified to curtail this ambition to embrace variables Y_1, Y_2, Y_7, X_6 and X_7.

III: 3.5. Interpretation of Correlation Matrix

An overall assessment of the correlation matrix (Table 7) reveals that none of the X variables correlates very strongly with any of the Y variables (an exception could perhaps be made for $X_6 - Y_1$).[25] In terms of a regression analysis the scope is limited to a few variables with only a fairly small part of the variation being explained.

In a more detailed analysis the primary interest is in the correlation between X and Y variables. Thus, income (X_1) produces one significant result. As was pointed

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[25] Results of contingency tests are included in the correlation matrix.

TABLE 6

CONTINGENCY TEST OF SELECTED VARIABLES X AND Y

	X_1	X_2	X_3	X_6	X_7
Y_1	18.27 (6)*	8.17 (9)	2.47 (9)	32.89 (9)*	7.44 (9)
Y_2	5.16 (4)	5.64 (6)	5.24 (6)	18.25 (6)	4.06 (6)
Y_3	11.57 (4)	11.22 (9)	6.90 (9)	27.37 (9)*	18.60 (9)
Y_4	5.24 (6)	26.80 (9)*	15.87 (9)	28.78 (9)*	14.66 (9)
Y_5	9.69 (6)	10.90 (9)	16.54 (9)	34.09 (9)*	6.17 (9)
Y_6	11.22 (6)	9.84 (9)	4.28 (9)	10.41 (9)	7.50 (9)
Y_7	4.15 (6)	8.95 (9)	14.70 (9)	25.92 (9)*	24.98 (9)*
Y_8	13.90 (6)	9.94 (9)	10.44 (9)	29.04 (9)*	25.72 (9)*
Y_9	1.74 (3)	3.72 (3)	2.47 (3)	16.75 (3)*	15.31 (3)*

LEGEND: For definition of X and Y variables consult Table 5. Digits in brackets denote the number of degrees of freedom. Critical levels at 1% level of confidence are: (3) = 11.34; (4) = 13.28; (6) = 16.81; (9) = 21.67. * = significant at 1% level of confidence.

TABLE 7

CORRELATION MATRIX FOR SELECTED VARIABLES X and Y

	Y_1	Y_2	Y_3	Y_4	Y_5	Y_6	Y_7	Y_8	Y_9	X_1	X_2	X_3	X_4	X_5	X_6	X_7
Y_1	-	.1056	.0248	.2588*	.2011	-.0521	.2745*	.3237*	.2154	.3476*	.0424	-.0975	.0629	.0631	.6131*	.1843
Y_2		-	.2393*	.2132	-.0679	.1698	.1561	.1114	.3119*	.0817	.0122	-.0408	.0472	.0965	.2072*	.0591
Y_3			-	.2892*	.1117	.2235	.1918	.2777*	-.0344	.1512	.1151	.0041	.0266	.1084	.3546*	.0547
Y_4				-	.3105	.2635*	.2891*	.4210*	.5216*	.0151	.1849	.0547	.0804	.2000	.4638*	.2007
Y_5					-	.2320*	.2117	.2759*	.2413	.2025	.1202	.1803	.2996*	.2789*	.4375*	-.1093
Y_6						-	.1695	.3648*	.0906	.1830	.1294	.1181	.2242*	.1772	.1693	-.0122
Y_7							-	.4932*	.3175*	.2220	.1032	.2114	.3237*	.2490*	.3734*	.2712*
Y_8								-	.1121	.2995*	.0426	.1759	.2625*	.3210*	.4555*	.3647*
Y_9									-	.1545*	.1557	.1470	.2070	.3283*	.3719*	.3092*
X_1										-	-.1912	.0013	.2367*	.2505*	.2718*	.2516*
X_2											-	-.4787*	-.3271*	-.4758*	.0499	.0370
X_3												-	.3234*	.4794*	-.0143	-.1462
X_4													-	.5869*	.2433*	.2170*
X_5														-	.2780*	.2908*
X_6															-	.2897*
X_7																-

Legend:

* significant at 99% level of confidence. Note that additional coefficients of the intercorrelation between Y-Y and X-X may be significant.

out earlier in this chapter the distribution properties of the income variable are such that any claims regarding the significance of the correlation between income and purchasing or building expenditures (Y_1) must be limited. Thus, whereas it seems safe to propose that income is positively correlated with purchasing or building expenditures the coefficient contained in Table 7 may not be accurate.

Of the other two socio-economic variables, age (X_2) and family size (X_3), only the relationship between age and expenditures on furnishings (Y_4) is interpreted as significant. Obviously this result implies that the total amount of money spent on furnishings increases with increasing average age of the cottage household. However, the fact that the age variable is able only to explain about .0234 percent of the variation in the dependent variable suggests that this variable, although not in a statistical sense, is rather insignificant.

Of the activity variables (X_4 to X_6), the compounded variable X_6 exhibits a higher degree of covariance with all Y variables as expected. Furthermore, all coefficients, except for up-keep (Y_6) and repairs (Y_2), are significant. This variable also yields, at least relatively speaking, rather high correlation coefficients.

Variable X_7 (number of days of occupancy), correlates significantly with taxes (Y_7), utilities (Y_8) and insurance

(Y_9). In the case of insurance the significance of the particular correlation coefficient could be questioned due to the low response rate to questions forty-nine A and fifty-three B. Nevertheless, these results give support for the hypothesis entertained for this variable.

The variable representing beach quality is based on information presented by Sabine (1969: 16-20). Due to the sample size it seemed meaningful only to stratify the sample into two subsamples. Subsample A comprises beaches of classes one and two, and subsample B consists of beaches of classes three to four.

To test the significance of beach quality the original hypothesis of $r=0$ has to be reformulated. Thus, instead of $r=0$ the correlation coefficients in Table 8 will be used to formulate a hypothesis for each pair of variables that will be tested. However, in the case of variables $X_7 - Y_1$ and $X_7 - Y_4$ the coefficients remain insignificant even in the correlation matrix for the subsamples (Table 8). Therefore, it could be concluded safely that these results are not significant. The hypotheses for $X_6 - Y_1$, $X_6 - Y_4$, $X_6 - Y_7$ and $X_7 - Y_7$ are $r=.6131$, $r= .4638$, $r= .3734$ and $r = .2712$ respectively. In cases where rho $\neq$ 0 (rho = E(r)) the distribution for r is skewed and has to be transformed. The formula for transforming r is given by Yamane (1973: 496) as $z_r = 1/2 \ln \frac{1+r}{1-r}$ which

TABLE 8

CORRELATION MATRIX FOR SUB-SAMPLES A AND B

	$X_{6.A}$	$X_{7.A}$	$X_{6.B}$	$X_{7.B}$
Y_1	.5899*	.1456	.6465*	.2457
Y_4	.5449*	.1082	.3527*	.3231
Y_7	.3178*	.0872	.4578*	.5209*

SOURCE: Questionnaire Survey

TABLE 9

TEST OF CORRELATION COEFFICIENTS

I	II	III	IV	V	VI
$Y_1 - X_{6.A}$	69	.671	.714	-.349	2.576
$Y_4 - X_{6.A}$	53	.611	.502	.770	2.576
$Y_7 - X_{6.A}$	73	.329	.392	-.527	2.576
$Y_7 - X_{7.A}$	64	.087	.277	-1.286	2.576
$Y_1 - X_{6.B}$	54	.769	.714	.421	2.576
$Y_4 - X_{6.B}$	41	.405	.502	-.598	2.576
$Y_7 - X_{6.B}$	50	.495	.392	.706	2.576
$Y_7 - X_{7.B}$	49	.578	.277	2.338	2.576

I: Correlated Variables

II: Number of Observations

III: Z_r

IV: Z_{rho}

V: Z value

VI: Critical Value at 99% level

SOURCE: Questionnaire Survey

is distributed normally approximately with variance of $\frac{1}{n - 3}$. The normal deviate is then written as $z = \frac{z_r - z_{rho}}{s_r}$. In the context of this study z_{rho} refers to the correlation coefficient for the total sample and z_r refers to the correlation coefficient for the subsamples. The results of these tests appear in Table 9.

From Table 9 it can be inferred that beach quality does not correlate significantly with any of the selected expenditure variables. However, as can be seen from that same table the z-value for subsample B, variables $X_7 - Y_7$, is rather close to the critical value. It could be argued that the significance level should have been fixed at the five percent level instead of the one percent level in cases where the null hypothesis is believed to be true. This is not to say that the significance level should be changed once the relevant figures are known, but in concluding the results of this test it should be borne in mind that it is quite probable that we would accept H_0 to be true when in fact it is false.

Should the null hypothesis be false in the case above, this would imply that for beaches of poorer quality there is a stronger relationship between the number of days the cottage is used and the taxes paid; note however that the opposite is not true. It may not be of much interest to suggest an explanation for this as the overall importance of variable X_8 seems very limited.

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Considering the results of the correlation matrix (Table 7) the utility of setting up a regression model is very limited. For the same reason the utility of evaluating the intercorrelation between X and Y variables becomes very limited. Therefore, it may suffice to say that some of the apparent correlation between Y variables could be expected and that the hypothesis concerning the independence between socio-economic variables and personal preferences seem valid in the case of variable X_6.

III: 4 Park Visiting

The response rate to the park visitor questionnaire suggests that the statistical analysis be limited in scope and possible bias of data be borne in mind when assessing the results.

III:4.1 Origin of Park Visitors

The visitor hinterland of the three parks on Pigeon Lake (Table 10) is very similar to that of cottaging. Thus, not only is Edmonton the residence of the majority of park visitors but also the vast majority of park visitors emanates from locations within a range of distance of zero to seventy miles of the lake. This rather localized hinterland could be expected as the type of recreation opportunities offered by these parks are of a rather ubiquitous character. That is to say, similar facilities to those available on Pigeon Lake will exist probably within closer distance of

TABLE 10

ORIGIN OF PARK VISITORS

I	II	III
Edmonton	43	67.2
Sherwood Park	5	7.8
Calgary	3	4.7
Other Locations Within 70 Miles of the Lake	8	12.5
Other Locations More than 70 Miles from the Lake	5	7.8
	64	100.0

Legend: I: Location
II: Number of Observations
III: Relative Share of the Total Number of Observations

SOURCE: Questionnaire Survey

TABLE 11

CHARACTER OF PARK VISITS

I	II	III
Day	13	20.3
Weekend	31	48.4
Part of Vacation	20	31.3
	64	100.0

Legend: I: Type of Trip
II: Number of Observations
III: Relative Share of the Total Number of Observations

SOURCE: Questionnaire Survey

places located far from Pigeon Lake.

III:4.2 Visitation Characteristics

Just under one-half of the total visits to the parks on Pigeon Lake are weekend trips (Table 11). The other half of the total number of visits is split three to two in favour of "part of vacation" trips. A large portion of the vacation trips are made up of those who have rented a space for their trailer for the whole season.

The fact that 82.8 percent of all visitors to the parks had visited Pigeon Lake before supports the proposition of the local character of these parks (Table 12). From Table 12 it can be seen that those who have previously visited the lake fall into two groups with regard to the number of annual visits; those who make an average of 2.27 trips (40.63% of total sample) and those who make more than seven per year (42.17% of total sample).

III:4.3 Visitor Characteristics

A general pattern emerging from the information contained in Table 13 is that park visitors do not undertake their visits on an individual basis but either with the family or together with friends. Thus, approximately one-third of the visitors to the parks on Pigeon Lake can be described as "two families with children". Similarly one-quarter of the visitor parties are one family with children.

TABLE 12

PREVIOUS VISITS TO PARKS ON PIGEON LAKE

I	II	III
0	11	17.2
1	10	15.6
2	4	6.2
3	9	14.1
4	2	3.1
5	1	1.6
6	-	-
6+	27	42.2
	64	100.0

Legend: I: Number of Previous Park Visits
II: Number of Observations
III: Relative Share of Observations

SOURCE: Questionnaire Survey

TABLE 13

DESCRIPTION OF VISITOR PARTIES

I	II	III
One Person Alone	0	0
One Family With Children	16	25.0
Two Families With Children	23	35.9
Organized Group	3	4.7
One Couple Only	5	7.8
Two or More Couples	6	9.4
Group of Friends	9	14.1
Other	2	3.1
	13	100.0

Legend: I: Group Description
II: Number of Observations
III: Relative Share of the Total Number of Observations

SOURCE: Questionnaire Survey

In terms of age (Figure XIX) it can be discerned that the bulk of visitors are relatively young; 87.1 percent are less than forty-five years of age. With the dominance of one or two families forming a group of visitors this could of course be expected. A comparison between the age distribution for park visitors and that for cottagers suggest that the former is on the average slightly younger; $\bar{x}_{\text{park visitors}} = 26.75$ and $\bar{x}_{\text{cottagers}} = 32.5$. It is possible that this circumstance may contribute to the fact that park visitors appear to be slightly poorer than cottagers (Table 14). The difference with regard to income between these groups is however fairly small. This may suggest that even park visiting is restricted, at least relatively speaking, to the better off in this society.[26]

III: 5 Institutional Camps

The nature of institutional camps as well as the response rate to the questionnaire seeking information about this activity, suggested that the presentation be made in chapter four to avoid unnecessary fragmentation of information.

III: 6 Conclusion of Chapter III

The focus of this chapter has been an attempt to evaluate the relationship between certain parameters of

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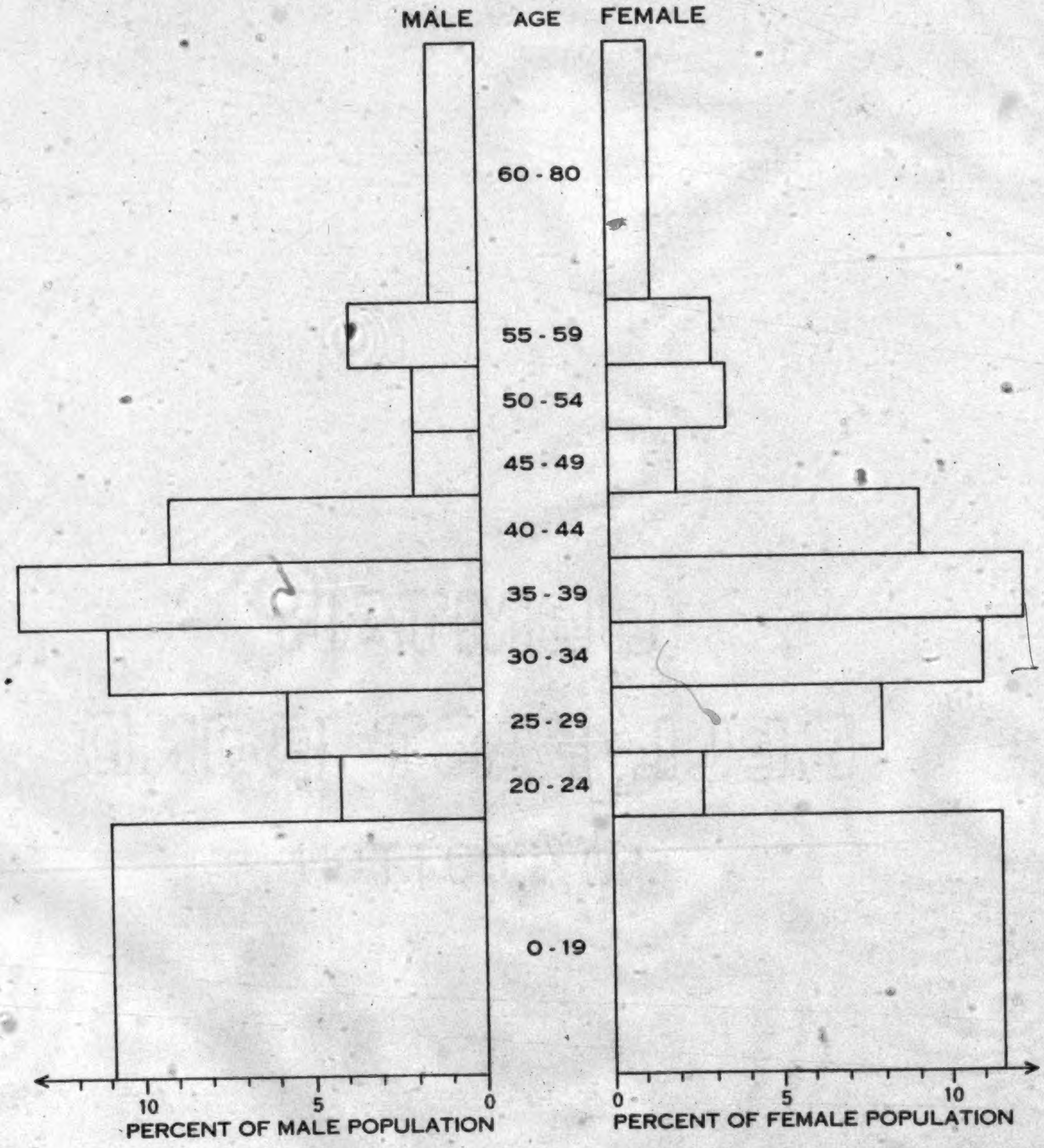
[26] The impact of travel costs on participation of low income groups has been discussed by Lindsay and Ogle (1972: 19-24).



NOTE: FOR THE PURPOSE OF ILLUSTRATION THE AGE GROUP '60 YEARS PLUS' WAS GIVEN AN UPPER LIMIT OF 80 YEARS OF AGE

FIGURE XIX

AGE DISTRIBUTION FOR PARK VISITORS TO PIGEON LAKE

SOURCE: QUESTIONAIRE SURVEY, 1973

TABLE 14

INCOME DISTRIBUTION AMONG PARK VISITORS

I	II	III
- 3,000	3	3.1
$3,000 - 3,999	-	-
$4,000 - 4,999	1	1.6
$5,000 - 5,999	4	6.2
$6,000 - 6,999	1	1.6
$7,000 - 7,999	3	4.7
$8,000 - 8,999	2	3.1
$9,000 - 9,999	5	7.8
10,000 - 14,999	28	43.8
15,000 +	18	28.1
	64	100.0

Legend: I: Income in Dollars
II: Number of Observations
III: Relative Share of Total Number of Observations

SOURCE: Questionnaire Survey

recreation which could be of utility in attempts to assess the economics of similar recreation developments elsewhere.

The analysis of cottager data faced certain limitations with regard to its scope imposed by the constraints pertaining to the statistical methods of analysis employed. However, certain important results did emerge from this analysis. Thus, it can be concluded that the hypotheses entertained concerning expenditures incurred by cottagers on the whole have been accepted as valid. The main reservation to this pattern that should be observed concerns the income variable. The hypothesis concerning this variable has not been possible to ascertain in desired detail.

The strongest correlation was found between the variable reflecting personal preferences and expenditures. The amount of variation in the expenditure variables explained by this personal preference variable is rather low. It is possible that a more accurate measurement of this variable would have yielded more affirmative results. It could of course be suggested that other variables should be sought to explain the remaining variation in expenditures not yet accounted for. However, it seems likely that such variables also will operate stochastically with regard to other socio-economic variables. From the point of view of this study one could probably assume that such variables will retain their character throughout the universe and what is true for cottaging on Pigeon Lake is true for cottaging in the rest of the universe.

In the case of park visiting the statistical basis for making inferences to the universe is much more limited than in the case of cottaging. It could however be suggested that lakes with similar park facilities as those found on Pigeon Lake will give rise probably to a similar magnitude of expenditures.

CHAPTER IV

IV: Analysis

IV:1. Introduction

In Chapter I outlining the objectives and scope of this study, a metropolis - hinterland framework was suggested as the conceptual basis on which hypotheses concerning the spatial characteristics of an economic impact of, in this case recreation, could be formulated. The metropolis - hinterland concept when expressed in a hierarchial from, implicitly connotes the presence of a spatial variable. In recognizing such a hierarchy the Clawson framework of a recreation experience discussed previously consisting of five distinctive phases may be employed.

Phases one and five, anticipation and recollection respectively, may be treated together as they imply the same location. The origin and final destination of a trip which is the equivalent of the recreationist's permanent place of residence, will be a metropolis relative to the local economy. The general characteristics of the relationship between the metropolis and its hinterland as outlined in chapter one suggests that a major part of the economic impact (direct plus indirect effects) will be felt in the metropolis or the location of phases one and five of the recreation experience. On the basis of the information presented in Table 2 it could then be logical to propose that the prime beneficiary of the economic impact of recreation on Pigeon Lake is Edmonton.

Of the two travel components in the Clawson framework, travel to recreation site with all probability will be more important than return travel from the recreation site. In cases where urban centres are adjacent to routes of access to the recreation site, such centres may constitute an intervening opportunity to recreationists. Whereas such centres can play a role in attracting recreation trade in phase three, that is travel to site, this role is most likely reduced in the return travel phase. In the context of this study the dominant purpose of the return travel phase is that of transportation. Consequently expenditures incurred on the return trip will be limited and may or may not be realized prior to arrival at the recreationist's destination.

As outlined in the objectives and scope of this study the on-site experience, which in spatial terms equates with participation in the local economy, is the main concern of this study. In order to formulate a hypothesis concerning the economic impact of recreation on the local economy it is necessary to elaborate on some of the more important aspects of hinterland character of this economy.[1]

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[1] The absence of a secondary sector in a particular hinterland economy may be attributable to several factors.

Perhaps the most salient feature of the Pigeon Lake local economy is the lack of a secondary sector, that is manufacturing in its economy. As goods will pass through the secondary sector before they are available for consumption this makes it possible to infer that goods purchased locally have been imported. Implicit in this argument is that the primary sector will export its products. The local economy, therefore, can be described as consisting of two sectors, primary and tertiary, which are not directly integrated.

When recreation is introduced into this type of economy it can be seen as a temporary expansion of the household sector.[2,3] The economic impact this will have on the local economy will be registered in the tertiary sector or service sector. The magnitude of such an impact will not only depend on the total amount of money that is spent locally but also for what such expenditures constitute a payment. In this case it may prove useful to separate

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However, in general it could be postulated that this is a function of the economics dictated by the metopolis. In other words threshold levels of for example production of durable goods necessary for the establishment of a particular economic activity, which is largely determined by the economics of the metropolis, are not met in the hinterland economy.

[2] The temporary aspects of the expansion of the household sector refers to the seasonal character of recreation on Pigeon Lake.

[3] The expansion of the household sector can also be interpreted as an increased export base of the local economy.

such expenditures by recreationists into payments for goods and services.[4] In the former case a very substantial part of the total expenditures will leave the local economy as payments for imports.[5] Payments for services on the other hand will mainly constitute a remuneration for labour and the like and as such it will remain in the local economy during the first round of spending. The rate at which these local incomes will leak back to the metropolis will depend on the spending habits among the receivers of these incomes. Obviously the more that is spent locally, the slower the rate of leakage and the higher the local economic impact will be.

An additional aspect of the expansion of the household sector in the local economy refers to the potential inducement of growth. The fact that the household sector confines its interaction to the teritiary sector in conjunction with the metropolis' monopoly in the secondary sector will limit occurrence of any expansion of the local economy to the tertiary sector. From the discussion of the economic impact it could be suggested that the potential for economic growth in the tertiary sector will increase, ceteris paribus, with increasing proportions of the total expenditures being received for services rendered, which require a minimum of imports. Whether or not this will show as an actual expansion of local business will in turn depend on the extent to which existing operations can handle the increased business opportunities with disposable resources.[6]

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[4] One may probably encounter various combinations of these two extremes.

[5] Additional leakage may arise from employment of non-residents during the peak season.

To conclude this discussion by formulating a hypothesis concerning the overall economic impact on the local economy, it is expected that very substantial portions of the total expenditures made by recreationists may never enter the local economy and that substantial portions of what is spent locally will leave the local economy as payments for imports. Similarly economic growth in the local economy, if any, will occur in those parts of the tertiary sector where imports constitute only a small portion of the total value of the service sold.

The framework for expressing hypotheses concerning the spatial impact of recreation developments has to this stage been static, that is, the arguments presented above have not included any temporal aspects. The relationship between the metropolis and its hinterland is not static. In a long term perspective the metropolis will increase its dominance over the hinterland.[7] The extent to which such changes will affect the economic impact of recreation on a local hinterland economy may be difficult to accurately assess in this case. Due to the great practical difficulties encountered in obtaining data substantial parts of the information gathered for this study do not lend themselves to a breakdown necessary for an evaluation of the changes which have taken place over the years with regard to the type, magnitude and spatial allocation of expenditures. Whether or not it can be ascertained, it would seem logical, however, to suggest that the more dependent an operation is on imports for its revenue the more vulnerable it will be to adverse changes in the terms of trade with the metropolis. With adverse changes in the terms of trade it is conceivable that the local economy will lose some of its trade to the metropolis. This may result in a less diversified local (hinterland) economy, which in turn may speed up the rate by which expenditures made locally will leak back to the metropolis. In the long term perspective it is therefore the author's contention that the economic impact of recreation on the local economy, if not in absolute terms at least relatively speaking, will decrease.

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[6] There is always a possibility that the local economy will not be able to realize the maximum possible economic impact (from recreation) as a result of indivisibility of inputs. This would occur when the additional demand is below the threshold under which an expansion of an operation is not profitable.

[7] Whether or not such changes in the relationship between the metropolis and its hinterland are seen as abrupt

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or gradual in kind will perhaps depend on the scale and length of the time span over which such changes are recorded. This can be exemplified by the decline in the profitability of a hinterland located grocery or general store. Although the decrease in profitability may be gradual once the operation can no longer reach over the threshold of profitability, it will eventually cease to exist.

The above expressed hypotheses are difficult to operationalize in quantitative terms. It is therefore difficult, not to say impossible, to assess their validity through the use of statistical methods of analysis. Nevertheless, it is the author's contention that these hypotheses will aid in interpreting the information obtained concerning the economics of recreation.

IV: 2. Methods of Estimating Money Flows

In order to achieve a reasonable degree of confidence in estimates of the spatial allocation of expenditures incurred by recreationists, in this case, to Pigeon Lake it has been necessary to aggregate some observations. These are cases where only one or two observations indicate that money has been spent in a particular location. When estimates from the sample to the population are made, it is in terms of statistical probability possible that estimates based on an extremely low number of observations would be erroneous with regard to a particular location. In some cases, however, it was not possible to perform a meaningful grouping of observations. The estimates for these locations may not be very reliable which should be borne in mind when interpreting the spatial economic impact. The actual calculation of expenditure flows was derived as:

$\bar{x}.N.\alpha$: where $\bar{x}$ is the mean expenditure in the sample; N is the population size and α is the relative share of the total sample expenditures allocated to a particular location.

The method used to calculate expenditure flows pertaining to the expenditure diary is somewhat different from the above expression. Thus, the information contained in the expenditure diary is limited to expenditures incurred over the time span of one week.[8] To achieve comparable estimates this information had to be pro rated for a whole season. This was derived as:

$$\sum_{j}^{i} (D_{ij} \cdot \frac{x_{ij}}{7}) \cdot \frac{N}{n}$$

where D_{ij} is the number of days cottages_{ij} were in use in 1972;[9] x_{ij} is the total expenditure incurred over the time period of recording; n is the usable response (= sample) and N is the total number of cottages (= population).

IV: 3 Analysis of Money Flows

For the purpose of comparison as well as discussion of some major differences with regard to the generation of money flows, each type of recreational use of Pigeon Lake will be discussed separately.

IV: 3.1 Cottaging

In the following presentation of the spatial distribution of expenditures made by cottagers, a distinction between fixed and variable costs associated with cottage ownership will be made. The reason for observing this dichotomy is not only due to the difference in nature between these costs/expenditures but also due to the way in which they were measured.[10]

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[8] The major justification for limiting the time during which the respondent recorded any monetary outlays to one week, was that a longer time period most likely would have reduced the response rate drastically.

[9] It is assumed that no major changes in the number of days these cottages were utilized occurred between the years 1972 to 1973.

(a) Capital expenditures. The estimated spatial distribution of capital expenditures (fixed costs) on the building or purchasing of a cottage, investments (improvements and major repairs), furnishings and equipment, are presented in Tables 15 to 24. The summary of this information contained in Table 25 generally supports the thesis of metropolitan dominance. Thus, more than eighty percent of all capital expenditures never entered the local economy and Edmonton as a single location received almost sixty percent of them. It should be pointed out perhaps at this stage, that parts of the local economy (Thorsby, Ma-Me-O, Pigeon Lake, Mulhurst, and Westerose in Table 25) receive in various degrees benefits from this trade, with the exception of second hand transfers of lake property.

Assessing each type of expenditure separately it is perhaps surprising to find that of the estimated $853,500.00

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[10] Perhaps the most important difference with regard to the nature of these costs is that capital or fixed costs retain or appreciate in value over time. Variable costs are measured as an annual cost whereas fixed costs are a cumulative measurement of the total expenditures incurred by the present owners of cottages on Pigeon Lake up to the year 1973.

spent on purchases of cottage lots, only about thirty percent accrued to local residents (Table 15). The situation where Edmonton received about one-half and Wetaskiwin and Camrose together received about twelve percent of this total is in all likelihood less an effect of the devaluation of the dollar through inflation than it is an effect of sales of relatively large pieces of lake frontage to non-local residents who later subdivided and sold it for cottage development.[11]

To evaluate whether or not the local residents failed to realize the optimal economic return from land sales is virtually impossible. This difficulty arises at least in part from the fact that the opportunity cost of retaining the ownership of the land is unknown. Nevertheless, when measured in absolute dollars and cents it is clear that non-local residents captured the major part of this trade.

The costs involved in building the cottage are separated according to type into payments to companies, payments to individuals and expenditures on building materials (Tables 16 to 18). From Table 16 it can be seen that Edmonton based firms received about one-half of the payments made to companies engaged in building of cottages and that

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[11] Some cottagers who bought land directly from a local resident indicated that the former owner sold his land as a result of a decision to leave the area. This would suggest then that some of the money which has been attributed to the local economy may have left instantly after the sale of land.

TABLE 15

SPATIAL DISTRIBUTION OF EXPENDITURES; PURCHASE OF COTTAGE LOT

I	II	III	IV	V
Edmonton	35,055.00	50.14	427,946.97	25
Pigeon Lake	21,480.00	30.73	262,281.82	24
Wetaskiwin	5,175.00	7.40	63,159.31	7
Camrose	3,500.00	5.01	42,760.56	4
Other Locations Within 20-70 Miles of the Lake	4,200.00	6.00	51,210.25	4
Germany	500.00	.72	6,145.23	1
	69,910.00	100.00	853,504.14	

Legend: I: Location
II: Expenditures in Dollars Derived From Sample
III: Relative Share of Total Sample Expenditure
IV: Estimated Expenditures in Dollars for Population
V: Number of Observations in Sample

SOURCE: Questionnaire Survey

TABLE 16

SPATIAL DISTRIBUTION OF EXPENDITURES; PAYMENTS TO COMPANIES ENGAGED IN BUILDING OF COTTAGES

I	II	III	IV	V
Edmonton	33,325.00	53.59	406,571.44	9
Mulhurst	15,850.00	25.49	193,385.07	8
Vancouver	8,000.00	12.87	97,640.88	1
Thorsby	4,273.00	6.87	52,120.65	6
Wetaskiwin	736.00	1.18	8,952.31	2
	62,184.00	100.00	758,670.35	

Legend (see Table 15)

SOURCE: Questionnaire Survey

local firms attracted about one-third.[12] This picture is almost reversed in Table 17 showing payments to individuals where the local economy received about one-half of all expenditures. This pattern of payments is probably a reflection of the advantage in terms of trade exercised by the metropolis. When it comes to major investments such as building the cottage, it is probable that lower estimates or bids on construction costs can be obtained in Edmonton than locally at Pigeon Lake because of a larger number of available building companies. From an economic impact point of view the absolute difference between the size of remuneration to firms on the one hand and individuals on the other may not be that significant. Thus, as payments to companies include the cost of materials supplied, each dollar payed to individuals will have a higher income and employment effect as this usually does not include the cost of imports.

The spatial distribution of expenditures on building materials (Table 18) roughly follows the pattern established in Tables 15 to 17, in that approximately one-half occured in Edmonton, one-quarter went to the local economy and the remaining twenty-five percent reached other centres outside the local economy.[13]

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[12] The estimate for Vancouver in Table 16 could be seriously overestimated as it is founded on a single observation.

[13] See footnote 12 and text regarding reliability of estimates based on a small number of observations.

TABLE 17

SPATIAL DISTRIBUTION OF EXPENDITURES; PAYMENTS TO INDIVIDUALS ENGAGED IN BUILDING OF COTTAGES

I	II	III	IV	V
Pigeon Lake	5,850.00	49.06	71,420.66	13
Wetaskiwin	2,504.00	21.00	30,571.42	4
Rimbey	2,000.00	16.77	24,413.46	2
Edmonton	1,570.00	13.17	19,172.65	6
	11,924.00	100.00	145,578.19	

Legend (see Table 15)

SOURCE: Questionnaire Survey

TABLE 18

SPATIAL DISTRIBUTION OF EXPENDITURES; VALUE OF BUILDING MATERIALS PURCHASED BY COTTAGE OWNER

I	II	III	IV	V
Edmonton	73,227.00	48.99	894,133.44	39
Thorsby	24,485.00	16.36	298,592.02	17
Ma-me-o	12,810.00	8.57	156,414.03	8
Wetaskiwin	10,950.00	7.32	133,599.85	6
Calgary	9,500.00	6.35	115,896.05	1
Vancouver	7,000.00	4.68	85,416.30	2
Other Locations Within 20-70 Miles of the Lake	11,500.00	7.73	141,082.90	5
	149,472.00	100.00	1,825.134.59	

Legend (see Table 15)

SOURCE: Questionnaire Survey

Expenditures associated with the purchase of a cottage are presented in Table 19. The most salient feature of these expenditures is that the local economy hardly captured any trade at all. This is not particularly surprising as almost all cottagers are non-residents of the area. The pattern of property transfers depicted in Table 19 is probably relatively stable. The local economy will probably continue to play a minor part in these transfers as some cottagers resume permanent residence at the Lake. Future transfers of this type of property, however, will probably occur as a result either of the owner's death, the heirs being in all likelihood non-local residents, or through the owner leaving the area. In either case it could be inferred that the local economy would not be involved in such transfers.

The location of expenditures on investments in the cottage for major repairs and improvements (Tables 20 to 22) indicate that a higher proportion of the total amount of these expenditures has been received by the local economy than in the case of original building expenditures. Thus about three-quarters of all payments to companies, about two-thirds of the total payments to individuals and about two-fifths of the total expenditures on building materials accrued to the local economy. The equivalent proportions in the case of building expenditures are one-third, one-half and one quarter.

TABLE 19

SPATIAL DISTRIBUTION OF EXPENDITURES; PURCHASE OF COTTAGE

I	II	III	IV	V
Edmonton	262,850.00	67.76	3,209.023.18	34
Wetaskiwin	33,500.00	8.64	409,178.87	6
Camrose	25,700.00	6.63	313,987.95	6
Pigeon Lake	1[illegible],600.00	4.79	226,848.01	6
Calgary	18,500.00	4,77	225,900.83	5
Other Locations Within 20-70 Miles of the Lake	28,750.00	7.41	350,927.71	5
	387,900.00	100.00	4,735,866.55	

Legend: I: Location
II: Expenditures in Dollars Derived From Sample
III: Relative Share of Total Sample Expenditures
IV: Estimated Expenditures in Dollars for Population
V: Number of Observations in Sample

SOURCE: Questionnaire Survey

TABLE 20

SPATIAL DISTRIBUTION OF EXPENDITURES - INVESTMENTS IN COTTAGE; PAYMENTS TO COMPANIES

I	II	III	IV	V
Thorsby	16,800.00	42.28	222,780.64	6
Westerose	5,500.00	13.84	72,925.36	8
Mulhurst	5,475.00	13.78	72,609.21	7
Wetaskiwin	4,375.00	11.01	58.013.59	8
Ma-me-o	2,634.00	6.36	34,934.62	4
Edmonton	1,650.00	4.15	21,867.07	8
Other Locations Within 20-70 Miles of the Lake	3,300.00	8.31	43,786.82	4
	39,734.00	100.00	526,917.31	

Legend (see Table 15)

SOURCE: Questionnaire Survey

TABLE 21

SPATIAL DISTRIBUTION OF EXPENDITURES - INVESTMENTS IN COTTAGE; PAYMENTS TO INDIVIDUALS

I	II	III	IV	V
Mulhurst	5,495.00	22.08	73,558.22	9
Thorsby	4,693.00	18.85	62,797.66	7
Edmonton	4,250.00	17.07	56,867.70	4
Wetaskiwin	3,600.00	14.46	48,172.64	7
Ma-me-o	3,030.00	12.17	40,543.63	6
Westerose	2,625.00	10.55	35,146.70	6
Camrose	1,200.00	4.82	16,057.55	3
	24,893.00	100.00	333,144.10	

Legend: (see Table 15)

SOURCE: Questionnaire Survey

TABLE 22

SPATIAL DISTRIBUTION OF EXPENDITURES - INVESTMENTS IN COTTAGE; VALUE OF BUILDING MATERIALS PURCHASED BY COTTAGE OWNER

I	II	III	IV	V
Edmonton	53,136.00	36.57	710,987.30	46
Ma-me-o	33,660.00	23.17	350.466.93	29
Thorsby	23,600.00	16.24	315,735.13	25
Wetaskiwin	21,450.00	14.76	286,961.24	18
Vancouver	5,500.00	3.79	73,684.49	1
Camrose	3,350.00	2.30	44,716.18	5
Other Locations More than 70 Miles from the Lake	2,550.00	1.76	34,217.60	4
Pigeon Lake	1,400.00	.97	18,858.58	4
Other Locations Within 20-70 Miles of the Lake	650.00	.44	8,554.40	2
	145,296.00	100.00	1,944,181.85	

Legend (see Table 15)

SOURCE: Questionnaire Survey

This comparison is, however, at least partially if not completely invalid as no temporal breakdown of this information is possible. It is also the author's contention that these two types of expenditures are not directly comparable. Building costs of the cottage are rather substantial costs incurred in a short time span. In this case it seems logical to suggest that the metropolis based firms are able to negotiate building prices beyond price differentials which normally exist between the metropolis and its hinterland. Investments in the cottage on the other hand probably do not involve the same amount of planning as they are spread over longer periods of time. Actual price differentials will become, therefore, less important and the employment of local facilities will probably render more flexibility and general convenience to the cottager.

The spatial pattern of expenditures on furnishings and equipment exhibits certain important similarities (Tables 23 and 24). Thus among goods demanded by cottagers these are goods of the highest order and it is therefore not surprising that Edmonton takes such a dominant position in this trade. The somewhat greater dispersion of expenditures on recreation equipment is most likely a result of the differences in character between this type of good and furnishings.[14]

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[14] The utility of defining the order of these goods may not be particularly great not only because this will

TABLE 23

SPATIAL DISTRIBUTION OF EXPENDITURES ON FURNISHINGS

I	II	III	IV	V
Edmonton	90,763.00	86.91	1,428.065.32	84
Wetaskiwin	7,250.00	6.94	114,034.90	11
Camrose	3,480.00	3.33	54,717.04	5
Thorsby	2,200.00	2.11	34,670.55	3
Other Locations Within 20-70 Miles of the Lake	740.00	.71	11,666.40	4
	104,433.00	100.00	1,643,154.21	

Legend: (see Table 15)

SOURCE: Questionnaire Survey

TABLE 24

SPATIAL DISTRIBUTION OF EXPENDITURES ON EQUIPMENT

I	II	III	IV	V
Edmonton	156,884.00	75.63	2,001,087.89	91
Westerose	9,650.00	4.65	123,579.48	7
Calgary	6,440.00	3.10	82,033.49	4
Wetaskiwin	4,985.00	2.40	63,509.80	8
Camrose	4,330.00	2.09	55,306.45	6
Mulhurst	2,500.00	1.21	31,754.90	4
Thorsby	2,235.00	1.08	28,579.41	3
Locations Outside the Province of Alberta	10,360.00	4.99	132,312.08	4
Other Locations More Than 70 Miles from the Lake	8,000.00	3.86	101,880.30	3
Other Locations Within 20-70 Miles of the Lake	2,050.00	.99	26,197.79	
	207,434.00	100.00	2,646,241.59	

Legend: (see Table 15)

SOURCE: Questionnaire Survey

TABLE 25

SUMMARY OF THE SPATIAL DISTRIBUTION OF CAPITAL EXPENDITURES INCURRED BY COTTAGERS ON PIGEON LAKE UP TO THE YEAR 1973

I	II	III
Edmonton	9,175,722.96	59.54
Wetaskiwin	1,216,153.93	7.89
Thorsby	1,015,276.06	6.59
Ma-me-o	682,359.21	4.43
Camrose	527,545.73	3.42
Pigeon Lake	500,033.19	3.24
Calgary	423,830.37	2.75
Mulhurst	371,307.40	2.41
Westerose	231,651.54	1.50
Rimbey	24,413.46	.16
Other Locations Within 20-70 Miles of the Lake	712,802.15	4.63
Locations Ouside the Province of Alberta	395,198.98	2.56
Other Locations More Than 70 miles from the Lake	136,097.90	.88
	15,412,392.88	100.00

Legend: I: Location
II: Total Estimated Expenditures in Dollars
III: Relative Share of Total Estimated Expenditures

SOURCE: Tables 15 to 24

(b) Current expenditures. Current expenditures or variable costs have been separated into costs of up-keep of the cottage, taxes, utilities, insurance and expenditures for food and durable goods, the latter measured by the expenditure diary.

The spatial distribution of the estimated $184,120.71 spent on up-keep of cottages (Table 26) bears a resemblance to the general pattern established for capital costs (Table 25). In this context it would seem reasonable to suggest that the spatial pattern for expenditures on up-keep could be expected to be congruent with that of investment expenditures. This rests on the proposition that these expenditures are very similar in nature; both are relatively low cost and do not involve much planning. Should this assumption be valid it could be interpreted as supporting the thesis that the local economy's share of the total trade is decreasing over time. However, the statistical confidence with which such a conclusion can be drawn suggests that no definitive claims

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change probably over time but also because any two goods with the same or similar order may exhibit certain characteristics that would make them significantly different in a particular context. Whereas the marketing of furnishings has been subject to strong concentration, allowing economies of scale, this is only to a lesser degree the case in the marketing of recreation equipment. This circumstance, combined with the fact that at least certain types of recreation equipment can be added to other low order functions as a logical way of expanding some business operations, has made it possible for the local economy to capture some of the recreation equipment trade.

TABLE 26

SPATIAL DISTRIBUTION OF CURRENT EXPENDITURES;UP-KEEP

I	II	III	IV	V
Edmonton	5,695.00	51.80	95,374.53	47
Thorsby	2,240.00	20.37	37,505.39	19
Ma-me-o	1,020.00	9.28	17,086.40	12
Wetaskiwin	870.00	7.91	14,563.95	7
Camrose	475.00	4.32	7,954.01	8
Calgary	75.00	.68	1,252.02	1
Pigeon Lake	500.00	4.55	8,377.49	5
Other Locations Within 20-70 Miles of the Lake	120.00	1.09	2,006.92	
	10,995.00	100.00	184,120.71	

Legend: (see Table 15)

SOURCE: Questionnaire Survey

be made but that it may rather be seen as an indication of support.

In the case of the insurance and utilities for the cottage, cottagers were not asked to make a spatial breakdown of expenditures with regard to location. In the case of insurance it could be safely assumed that no money would be spent locally and, therefore, an aggregate measure would suffice. The same assumption was made concerning utilities. In this case however some money, although a minute amount, is spent locally.[15] In the overwhelming majority of cases the cost of utilities constitutes payments for propane and electricity.[16] The major part of the propane is delivered by a Wetaskiwin located firm and the electric power is supplied by Calgary Power. On the basis of this information the author concluded that all of the estimated $78,387.00 spent on insurance and a very substantial portion of the estimated $93,250.95 spent on utilities never entered the local economy.[17,18]

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[15] Expenditures incurred locally are for fuel oil and wood and do not exceed a total of $1,000.00.

[16] In a few cases the total cost of utilities will include a fee for telephone as well.

[17] As pointed out above the estimates of insurance costs may be inaccurate.

[18] As many insurance firms have their head offices outside the Province a small part of the insurance expenditure will undoubtedly leave the Province.

For a discussion of the spatial characteristics pertaining to taxes on recreation property, a distinction between resort areas designated as summer villages and areas without such status should be made.[19,20] Summer villages levey their own taxes whereas those located elsewhere on the Lake pay taxes either to the County of Leduc or the County of Wetaskiwin. In the case of the latter the entire amount will initially leave the local economy. Clearly certain portions of this will subsequently be transferred back to the local economy through the services provided by the counties. To what degree cottagers receive services equivalent to taxes paid is virtually impossible to ascertain. Similarly it is difficult to assess to what extent, if any, local residents benefit from these taxes either through employment or sales of goods needed for the provision of such services.

The relative autonomy exercised by the summer villages with regard to their own finances has implications for the spatial flow of taxes different to those for non-incorporated beaches. Thus, apart from expenditures on

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[19] Stewart (1970: 1-5) has discussed the legal aspects relevant to the development of summer villages in the Province of Alberta.

[20] At the time of this study there were nine summer villages on Pigeon Lake; Argentia, Crystal Springs, Golden Days, Grandview, Itaska, Ma-Me-O Beach, Silver Beach and Sundance Beach (Alberta, Municipal Affairs, 1972: 167-16).

education which are partially divided between the Province and the county, they are quite independent of local government authorities. As most cottagers are exempted from the education tax, parts of the expenditures incurred by the village on education are covered through grants and subsidies received. The remainder of the tax revenue plus any additional income of the village is used for the provision of services to the cottagers, maintenance and investments in facilities in the village. The benefits to the local economy from these commitments on the part of the summer villages are difficult to assess. As virtually all inhabitants of these villages are classified as recreationists or cottagers in this study and the summer villages have legal responsibility only for the areas within their boundaries it would seem that the final benefits of these investments accrue to cottagers only. A few job opportunities will of course arise from the activities of the summer villages. These jobs are either provided on a casual or part-time basis. Several of these jobs are taken by cottagers but the local input seems if not negligeable at least very limited.

It is estimated from the cottager sample that a total of $125,774.14 was paid in taxes for the year 1972. Assessment records made available to the author for the beaches outside the summer villages on Pigeon Lake showed that $15,425.69 was paid in taxes to the County of Leduc and that $5,139.00 was paid to the county of Wetaskiwin in 1972. Statistics on taxes paid to summer villages on Pigeon Lake (Alberta, Municipal Affairs, 1972: $183,135) show that a total amount of $105,182.98 was paid in 1972. This figure includes taxes paid by what is considered here to be non-recreationists, an amount estimated to be around four to five thousand dollars. This would in turn mean that the sample based estimate is about three to four percent too high, which is interpreted as a rather accurate estimate.

The type of current expenditure made by cottagers still to be discussed are expenditures associated directly with the use of the cottage. Estimates of the amount and location derived from the expenditure diary are given in Table 27. Thus, just over fifty percent was spent outside and slightly less than fifty percent was spent within the local economy.[21] Interpreting the results in the Clawson framework it is clear that the anticipation phase of the

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[21] Several cottagers reported that they had a deep freezer at the cottage and that their recording of expenditures on groceries and meats (item one in the expenditure diary) would not be typical as they had already stocked up on staples. A check of the estimates derived from the expenditure diary shows that an average of $1.08 was spent/household member/day. The author has not been able to obtain any estimates which could confirm or refute the validity of this figure. However, the author is inclined to suggest that this figure is somewhat too low and that the real cost should lie around $2.00 (in 1973). If the above situation has led to an underestimation of expenditures on food it is the author's contention that the estimates of the metropolises' share in Table 27 should be greater.

TABLE 27

SPATIAL DISTRIBUTION OF CURRENT EXPENDITURES; EXPENDITURE DIARY

I	II	III	IV	V	VI
Edmonton	757,666.05	49.18	76,815.12	680,850.93	142
Thorsby	256,042.62	16.62	209,948.44	46,094.18	76
Westerose Crystal Springs	151,925.88	9.86	150,108.82	1,817.06	96
Mulhurst	133,411.84	8.66	130,673.58	2,738.26	123
Mission Beach	68,308.63	4.45	68,523.05	-	69
Ma-me-o	65,308.63	4.24	65,308.63	-	49
Wetaskiwin	58,174.10	3.77	45,091.29	13,082.81	8
Camrose	15,516.86	1.01	-	15,516.86	5
Warburg	7,646.85	.50	7,646.85	-	4
Calmar	5,436.38	.35	1,470.55	3,965.83	5
Fisher Home	5,379.46	.35	5,379.46	-	11
Winfield	4,625.47	.30	4,625.47	-	4
Other Locations Within 20-70 Miles of The Lake	10,980.60	.71	10,980.60	-	4
	1,540,673.79	100.00	776,571.86	764,065.93	

Legend: I: Location
II: Total Estimated Expenditures in Dollars
III: Relative Share of Total Estimated Expenditures
IV: Total Estimated Expenditures Incurred While at
V: Total Estimated Expenditures Incurred While Going to Cottage
VI: Number of Observations

SOURCE: Expenditure Diary

recreation experience plays a major role in attracting trade. Similarly it can be seen that Thorsby as an intervening opportunity receives about seventy percent of its total trade.[22]

The fact that Edmonton receives about five percent of its trade from cottagers staying at the lake probably stems from the custom of commuting breadwinners, encouraged by relatively lower prices in the city, to stock-up on groceries before going to the lake. Similar comments could probably be made with regard to Wetaskiwin. In this case however one would be inclined to suggest that even non-residents of Wetaskiwin staying at the lake, go shopping there.

IV: 3.2 Park Visiting

Although it can be recognized that certain capital expenditures are associated with or even necessary for participation in this type of recreation (for example certain recreation equipment and transportation) it is very difficult to assess the magnitude of these costs accurately.[23] The following presentation, therefore, will be limited to variable costs resulting from visitation of public parks. The relatively low response rate to the park visitor questionnaire has made it necessary to keep the analysis of pertinent money flows on an aggregated level. It should also be kept in mind that the estimates derived on the basis of the returned questionnaires may be subject to bias and that whatever claims made regarding these estimates should be seen more suggestive than definitive.

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[22] A similar remark could probably be made about Calmar. In this case, however, the total volume of trade is so low that it would at any rate not be particularly significant.

[23] It could probably be claimed that virtually all of these expenditures would occur outside the local economy. In the case of park visiting it seems that capital costs will be incurred in phase one of the recreation experience whereas in the case of cottaging the whole recreation experience is a continuous phenomenon with capital costs incurred during all phases except travel-back.

Table 28 showing the spatial distribution of expenditures incurred by park visitors during phase three to five of the recreation experience, indicates that slightly more than forty percent of the total cost of making the trip occurred during these phases and that about ninety percent of this was spent locally. Among the individual estimates in Table 28 the dominance of the Indian Campgrounds and their immediate vicinity, especially in comparison to the visitation figures for Zeiner Park, may partially be explained by the relatively low number of day visitors to the former. The estimate for Pigeon Lake Provincial Park refers only to entrance fees paid by park visitors.[24,25] Expenditures

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[24] As no commercial outlets are located in the immediate surroundings or within the park itself any expenditures incurred locally by visitors to the park are included in either of the other estimates.

[25] It was impossible to establish estimates on expenditures made by day visitors to Pigeon Lake Provincial Park. It is, however the author's contention that this visitor group is insignificant or at least of only minor importance in terms of generating money flows.

TABLE 28

SPATIAL DISTRIBUTION OF EXPENDITURES INCURRED BY PARK VISITORS DURING PHASES THREE TO FIVE OF THE RECREATION EXPERIENCE

Location	$ Spent	%
Zeiner Park Fisher Home	58,241.19	35.91
Indian Campgrounds Ma-me-o Beach Westerose Crystal Springs	69,166.40	42.65
Pigeon Lake Provincial Park	1,757.73	1.08
Pigeon Lake Local Economy	19,714.61	12.61
Other Locations Within 20-70 Miles of the Lake	13,307.92*	8.20
	162,187.85	100.00

SOURCE: Questionnaire Survey

*Not all of this constitutes expenditures incurred during the travel-back and recollection phases of the recreation expierence. A certain proportion of this amount reflect expenditures made by recreationists temporarily leaving the lake.

incurred elsewhere in the local economy or outside the local economy were made either during the on-site or travel-back phases of the recreation experience.

In the case of Zeiner Park, owned and operated by the County of Leduc, admission fees included in the estimate given in Table 28 will at least technically leave the local economy. The revenue for the season of 1973 was $8,207.00 which is slightly less than the corresponding figure for 1972.[26] The cost of operating the park in 1973 is not known but it was probably similar to that of 1972. Thus, of the total operating costs in 1972, forty percent constituted the salary of the park warden and the remainder was spent on supplies to the park. As the park warden was a local resident and as certain park supplies were acquired probably locally it would appear safe to suggest that between two-thirds to three-quarters of the revenue of Zeiner Park was returned to the local economy.[27]

The estimated revenue of Pigeon Lake Provincial Park is no doubt considerably below what is respent locally through salaries to staff and purchases of goods and services required for the operation of the park. The proportion of the current operational budget of $55,000.00 which is spent locally has not been possible to estimate precisely.[28]

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[26] Statements on revenue in 1973 and revenue and expenditures in 1972 for Zeiner Park was obtained from the county office in Leduc.

[27] The estimate in Table 28 for Zeiner Park assumed that seventy percent of the park revenue was returned to the local economy.

The very short history of this park has made it possible to derive some approximate figures on the capital cost of creating this facility. Thus, about $706,299.00 has gone, so far, into the development of this park from its start in 1969 until the end of 1973 and another $100,000.00 is estimated to have been spent finalizing the development of the park. Of the investment completed up to the end of 1973 it is estimated somewhat more than $200,000.00 was spent locally.[29]

Turning to the portion of the variable costs that were incurred during the anticipation or travel to site stages of the trip it can be seen from Table 29 that it accounts for sixty percent of the total cost of the whole trip. It does not seem unjustified to suggest that the very bulk of this amount was spent in the home location of the visitors.[30]

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[28] Parks Regional Manager G. J. Strudwick of Alberta, Lands and Forests, Provincial Parks Division forwarded statistics relevant to the development and operation of Pigeon Lake Provincial Park.

[29] Mr. Strudwick indicated that . . . "local involvement was considerable in the initial stages . . . (of development and) . . . that in excess of $200,000.00 was spent locally".

[30] A comparison between amount spent in a particular location (Table 29) and the number of parties from that location (Table 10) should not be made as the former does neither take into account the party size nor length of stay.

TABLE 29

SPATIAL DISTRIBUTION OF EXPENDITURES INCURRED BY PARK VISITORS DURING PHASES ONE AND TWO OF THE RECREATION EXPERIENCE

Location	$ Spent	%
Edmonton	172,250.48	76.42
Sherwood Park	33,157.56	14.71
Red Deer	10,736.74	4.76
Wetaskiwin	3,221.51	1.43
Thorsby	2,934.62	1.30
Calgary	2,273.50	1.01
Leduc	839.78	.37
	225,414.19	100.00

SOURCE: Questionnaire Survey

Comparing cottaging and park visiting, without considering population sizes and land area occupied, it is clear, provided the estimates are reasonably accurate, that cottagers generate more local expenditures both in absolute and relative terms. However, the concentration of public parks around the lake to a few locations relative to cottaging, suggests that expenditures made by park visitors locally may constitute a significant contribution to business operations located in the vicinity of these parks.

IV:3.3 Institutional Camps

Similar to the survey of park visitors the rate of return of institutional camp questionnaires suggests that caution be taken in the interpretation of results. For further discussion it is assumed however, that the three responses obtained will permit an approximate protrayal of expenditures made by all seven camps.

Institutional camps generate expenditures similar to those involved in cottaging. A distinction will be made, therefore, between capital and current costs. Estimates of these costs are presented in Tables 30 and 31 respectively. The spatial allotment of expenditures emerging in Table 30 bear a basic resemblance with the pattern already established for cottaging. Thus, Edmonton received about two-thirds of all expenditures and Pigeon Lake's local economy about one-third. The insignificant role played by other centres

TABLE 30

SPATIAL DISTRIBUTION OF CAPITAL EXPENDITURES INCURRED BY INSTITUTIONAL CAMPS

I	II	III	IV	V	VI
Edmonton	65,333.33	447,526.33	23,566.67	536,426.33	62.37
Pigeon Lake	45,733.34	251,503.00	1,166.67	298,403.01	34.69
Wetaskiwin	-	24,304.00	-	24,304.00	2.83
Calgary	-	-	933.33	933.33	.11
	111,066.67	723,333.33	25,666.67	860.066.67	100.00

LEGEND: I: Location
II: Purchase of Land
III: Expenditures on Improvements
IV: Expenditures on Equipment
V: Total Expenditures
VI: Relative Share of Total Expenditures

SOURCE: Questionnaire Survey

TABLE 31

SPATIAL DISTRIBUTION OF CURRENT EXPENDITURES INCURRED BY INSTITUTIONAL CAMPS

I	II	III	IV	V	VI	VII
Edmonton	46,725.00	23,407.79	-	-	70,132.79	58.25
Pigeon Lake	16,125.00	15,456.21	-	-	31,581.21	26.23
Wetaskiwin	3,150.00	-	6,609.00	993.14	10,752.14	8.93
Calgary	-	-	6,609.00	-	6,609.00	5.49
Leduc	-	-	-	1,324.19	1,324.19	1.10
	66,000.00	38,864.00	13,218.00	2,317.33	120,399.33	100.00

Legend:
I: Location
II: Expenditures on Food
III: Expenditures on Up-Keep
IV: Expenditures on Utilities
V: Expenditures on Taxes
VI: Total Expenditures
VII: Relative Share of Total Expenditures

SOURCE: Questionnaire Survey

(3% of total capital expenditures), compared with cottaging, can probably be attributed to the concentration of the headquarters of the camps at Edmonton.[31]

The spatial distribution of current expenditures, in relative terms, also exhibits strong similarities with that of cottaging and park visiting (Table 31). It should perhaps be pointed out that some of these estimates perhaps should have been expressed utilizing only a nominal scale of the spatial variable. Thus, expenditures on utilities were recorded in the same fashion as for cottagers, that is, without any spatial breakdown. The same reasoning presented in the cottager section of this chapter was applied in order to classify these expenditures spatially. Thus, it is inferred that utilities are paid to companies outside the local economy. What the actual distribution is outside the local economy is only of minor interest here.[32]

The estimates of taxes was derived by establishing the location of these camps.[33] The relative insignificance of the total amount of tax payments makes any difference between the estimated and true value rather insignificant.

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[31] A few camps also have Calgary as a base. There is, however, probably no reason to suggest that the Calgary estimate should have been higher had all questionnaires been returned. Of the two-centres, basically equal with regard to supplying improvements and equipment, Edmonton has a greater opportunity for capturing this trade due to its proximity to the Lake.

[32] The equal split of these expenditures between Wetaskiwin and Calgary may not be completely accurate but for the purpose of achieving an operational solution to this problem it was deemed acceptable.

[33] Alberta, Department of Culture Youth and Recreation, 1973.

Due to a deficiency in the questionnaire utilized (see Appendix 3, question 8) the spatial distribution of expenditures on up-keep was not recorded. To achieve a spatial breakdown of these expenditures it was necessary to make certain assumptions. The overall similarities found between institutional camps and cottaging suggested that the distribution of expenditures on up-keep for cottagers would be similar to that of institutional camps. It also seemed reasonable to suggest that the spatial allocation of these expenditures would be limited to the local economy and Edmonton. The relationship between Edmonton and the local economy of 51.8 : 34.2 (see Table 26) with regard to the distribution of up-keep costs was then employed to derive the relevant estimates for the institutional camps.

IV: 4 Impact on Local Business Activity of Recreation

As outlined in Chapter II the main purpose of the business interviews was to establish a measure of the income and/or employment effects of the increased trade brought about through recreation. This evaluation will be restricted to the direct impact of this trade. The validity of thus limiting the analysis rest on the proposition that indirect effects are negligeable. The lack of a secondary sector in the local economy will restrict any multiplier effect to money earned in one part of the tertiary sector being respent in another part of that sector. Such a multiplier would, if at all measurable, be of a very minute character and consequently would not significantly alter the results obtained through an evaluation of direct effects only.

Although the sample of businesses was complete it has been necessary to rely on estimates of the pertinent parameters. This is due of course to the lack of a hundred percent response rate and some questionnaires being only partially completed. Estimates of the employment and income effects were derived by multiplying the relative share of the total trade of each business attributable to recreation by the total amount of money paid in wages and salaries and the total number of months of work (full-time) for each business respectively. This could potentially yield too low estimates especially in the case of employment. Clearly, if those employed year round were under employed in the off season, the additional trade brought about through recreation would not be accounted for. In reality it is of course extremely difficult to measure this effect accurately. This is at least partly due to the possibility that certain types of work loads are saved for the off season when actual trading activities are less intensive. Another factor to consider is the possibility of personnel taking on extra workloads in the summer season and working less than full-time in the off season yet making a full-time employment contribution. In this context it is the author's contention that the information obtained through questions five and six in the business questionnaire (see Appendix 4) has aided in rendering approximate estimates of employment. It is thus estimated that a total of 34.64 full-time year round jobs at a total salary of $250,151.25 were directly attributable to recreation on Pigeon Lake in 1973.[34]

Outlining the hypotheses concerning the economic impact of recreation on the local economy in the early part of this chapter it was proposed that businesses providing services as opposed to goods would contribute a greater proportion of the impact and also be the type of business, if any, that most likely would expand its operation. To ascertain this proposition businesses were separated accordingly. In some cases the distinction between whether or not the revenue of a business stems from sales of goods or services was difficult to make. These estimates show that goods oriented businesses generated 13.44 jobs with an average salary of $6,682.77 or a total of $89,142.15 paid in wages (as a result of trade with recreationists). The equivalent estimates for service oriented businesses were 21.30 jobs, $7,557.65 in average salary and a total amount of $161,003.10 paid in wages.[35]

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[34] The total number of full-time employees and working owners for businesses attracting recreation trade in the local economy was estimated to be 86 in 1973. The size of the entire workforce employed in the tertiary sector in the local economy will exceed this figure as Thorsby and Winfield accommodate firms which are not directly connected with recreation trade.

The estimated gross turnover for service and goods oriented businesses has been estimated to be $271,434.25 and $731,437.92 respectively.[36]

The above estimates are interpreted as a general support for the expressed hypothesis. The future development of these operations is very difficult to forecast. Question seven and eighteen in the business questionnaire (see Appendix 4), are in many cases incomplete. In six of the thirty-two completed interviews the particular business had changed owners within the last two years as of 1973. It is obvious that none of these businessmen would have taken over the particular operation had they not been optimistic about its future. Two of them indicated, however, some uncertainty concerning the feasibility of their operation.

A detailed analysis of goods and services oriented operations, in an aggregated form for reasons of confidentiality, shows that there is a considerable degree of within group variation as to present profitability and future expectations. This does not necessarily refute the above hypothesis. In the case of service oriented enterprises it can be inferred that some businesses do not yield optimum returns due to a lack of investments. A few other businessmen indicated that their business endeavours had been obstructed by a particular summer village due to conflicting interests between them and cottagers.

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[35] A total of 19 goods and 21 service oriented businesses were found.

[36] These estimates compare relatively well with the estimated $976,856.74 spent by recreationists.

Among the goods oriented establishments food stores seem to be the least profitable. There are a few important anomalities to this pattern however. These are stores which through recreation developments and to some extent through cottagers becoming permanent residents at the lake, have achieved key locations with regard to the size of their hinterland and number of customers. In this context it could be suggested that the profitability of some stores may very well be at the expense of others as a result of internal processes of concentration within the local economy. This is however beyond the scope of this study to evaluate.

A few other comments should perhaps be made with regard to employment created by the influx of recreation trade. Of the total estimated 34.64 full-time year round jobs created, about one-third is made up of temporary jobs during the peak season. In the majority of these cases positions are filled by local residents. The leakage of money through employment of non-residents is therefore quite minute. These estimates are in all likelihood very sensitive to weather conditions.

IV: 4.1 Benefits to Indians

As one of the reasons for choosing Pigeon Lake as a study area was the location of an Indian Reserve at the lake, thus allowing this recreational resource to be ascertained, a few comments should be made about their involvement in recreation. The summer village of Ma-Me-O Beach is located within the boundaries of Indian Reserve 138A. This land was sold for cottage development apparently quite some time ago. The actual amount of money involved in this transaction is not known to the author but it can be concluded that no direct benefits to the Indians are now derived from this resort development. The main source of recreational income to the Indians come from the two campgrounds located at each end of the Summer Village of Ma-Me-O Beach, which are operated by the Indians. Minor monetary benefits in the order of $1,000.00 are derived by employment in the village. The total benefit to the Indian Band is estimated to be in the neighbourhood of $16,000.00 (the estimate of benefits derived from the campgrounds may be erroneous as it is based on only sixteen observations).

IV: 5 Conclusion of Chapter IV

The analysis of money flows generated by resources based recreation has demonstrated that the anticipation recollection phase of the recreation experience or the location of the origin of the recreationists, receives directly the major part of all expenditures. This, combined with leakages from the local economy to the economies of the origins of recreationists (to Pigeon Lake), strongly suggests that the economic impact of this activity will be considerably higher in such locations, mainly Edmonton, outside the local economy. An explanation for this spatial economic imbalance is sought in the theory concerning a metropolis and its hinterland.

The adverse changes in the economic relationship between the metropolis and its hinterland to the benefit of the former, have been possible to empirically verify only to a limited degree. The main reason for this is the lack of information allowing for a long term analysis of spending patterns and changes in the economic structure of the local economy.

From the analysis of capital costs incurred by cottagers it is inferred that the trade resulting from major investments in the cottage is dominated by the metropolis to a much higher degree than are minor investments and/or maintenance costs. Over time the latter will play a more important role among capital expenditures incurred by this group of recreationists in terms of a cottager's overall budget. The benefit to the local economy, ceteris paribus, may not be that great as the majority of cottagers prefer to do most of the work involved themselves.

Capital costs pertaining to the two other recreation groups, park visiting and institutional camps, are of a limited magnitude. In the case of park visiting only part of the total capital costs are known but will have been incurred most likely outside the local economy.

The general pattern concerning the spatial distribution of current expenditures is closely congruous with that of capital expenditures. In terms of volume of the local trade generated by recreationists to Pigeon Lake, cottagers prove to be both in absolute and relative terms the most important. However, business operations located in the vicinity of public parks (the major ones) on the Lake will probably receive more of their revenue from park visitors than any of the other two recreation groups. Institutional camps are both in absolute and relative terms quite insignificant as contributors to this trade.

The analysis of the impact of recreation trade on business activity is limited to the local economy. It has been estimated that slightly less than thirty-five full-time year round jobs were directly attributable to recreation trade in 1973. (This would probably constitute between 20 - 30 percent of the total labour force employed in the tertiary sector of the local economy). About one-third of these thirty-five jobs were temporary, only available in the park season.

Finally the profitability and future prospects of local business operations presented a rather heterogenous picture but it is inferred that service oriented enterprises do better than those deriving major parts of their revenue from sales of goods.

CHAPTER V

V: Recommendations and Conclusions

V:1 Policy Implications and Recommendations for Planning

In Chapter I the question concerning the utility of recreation as a tool in regional development was raised. It is the author's view that this question at least in part, has been answered in Chapters III and IV. However, in these chapters the assessment of the spatial economics of recreation was confined to a status quo situation. From the point of view of regional development planning, a context in which recreation has been suggested as a means to achieve certain goals, it is pertinent also to ask what possibilities there are of intentionally changing the spatial economic impact as documented above.[1] Clearly this is a task of considerable proportions. Therefore, the chief purpose in the following discussion is not to attempt to solve or answer all questions that could be raised in this context. It is rather to attempt to raise some questions in the light of the study's results and present some possible approaches for their solution.

To evaluate the potential for planning an expansion of recreation trade in economically depressed rural regions, a scrutiny of certain spatial parameters of both recreation and economically distressed areas is necessary. Thus, a very prominent characteristic of recreation on Pigeon Lake is the spatial restriction of the recreationist hinterland. Clearly this can also be conceived of as a demand zone surrounding urban areas. The spatial extent of this demand zone, which could be expressed as the number of recreationists generated for certain distances from the urban centres, will likely vary for different recreational pursuits. Generally speaking it can be stated that the number of visits generated by an urban centre will decrease exponentially with increasing distance from that urban centre (see for example Wolfe 1972). By the same token it can be suggested that areas located close to major urban centres will represent the greatest potential in terms of realizing an economic impact of recreation.

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[1] The scope of planning is here conceived of as limited to the involvement of the public sector through various physical, economic and social programs and policies in attempts to alleviate regional disparities.

In the case of remote areas relative to major urban centres it could of course be argued that a larger proportion of the total cost of making a trip to such recreation sites will be spent away from the recreationist's home. However, in terms of an economic impact this will be lower due to a greater spatial dispersion of expenditures incurred during longer (distance and time) trips as well as the fact that relatively fewer persons will undertake this kind of trip.

The types of water-based recreation activities with which this study is concerned are probably very sensitive to the "friction" of distance. However, in the case of cottaging it could be suggested that the demand zone will gradually be shifted outwards from the urban centres as a result probably both of increasing demand for and decreasing supply of land suitable for cottage development within close distances of the urban centres. An expansion of the demand zone for cottaging, however, does not necessarily imply that areas located further away from the urban agglomerations will receive the same economic benefits, ceteris paribus, as areas closer to the urban localities. Sabine (1969: 32) has noted for example that there is a negative relationship between distance to cottage and its degree of use.

In contrast to the spatial characteristics of the demand for recreation it is apparent that generally economically depressed areas are located far from major metropolises or urban centres. It is however beyond this study to develop this statement at any length here. Nevertheless, one factor that ought to be considered in this context is that persons living within commuting distance of a metropolis can directly benefit from economic development there, which will also include monetary benefits from recreation activities in the rural hinterland as demonstrated in this study. To what extent residents of areas beyond this distance range will benefit from any economic spread effects diffused by economic prosperity in the metropolis is very difficult to ascertain.

It would seem that attempts to employ recreation in reducing regional economic disparities are spatially restricted. Assuming the average maximum commuting distance of a major urban area to be around, say, forty to fifty miles or one hour's driving, and that recreation of the type discussed in this study, of any economic magnitude, is limited to occur within 150 miles (see Rigby 1966: 117), this would leave a donut shaped zone within which such planning endeavours realistically should be confined.[2] In terms of the Province of Alberta the areas where water-based recreation can contribute in any significant way to rural residents' incomes can be described as the Edmonton - Calgary corridor (see Alberta Land Use Forum 1974: 12). The analysis presented in Chapter IV clearly demonstrated that the major part of the economic impact of recreation has been and will continue to be, probably with increasing magnitude, in the major urban areas. The question which will be focused on here then, is whether or not it is possible to alter this impact in favour of the rural economy of the resort area.

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[2] These distance figures may not be exactly accurate. However, the main purpose of defining, especially the outer limits, of this demand zone is to indicate the degree of spatial restriction of this zone. It should be noted however that Crown land at Marie Lake for example, 250 miles to the north east of Edmonton, has been opened for cottage development. Demand has been substantial and most lots have now been bid on and cottages built. Construction has been often by local contractors though components for cottages are sold by Edmonton wood working plants.

It is clear from the study's results, that local business operations catering to recreation trade using a minimum of imports to derive their revenue, are one of the most promising planning targets in this context. To ascertain the possibility for development or expansion of service oriented business ventures in the tertiary sector of a hinterland/resort economy, the scale of benefits from a recreation resort when fully developed should be measured in monetary terms. This would encompass all expenditures by recreationists on accommodation, subsistence, user fees, goods and other services in the resort area. The size of total expenditures will depend not only on the relative allocation of land resources between public and private user groups and the actual physical design of developments on this land, but also on variations in the degree of usage over the year. In the short term, if a goal is to maximize total local trade volume generated by a recreation resort, land use conflicts concerning ecological aspects of overuse of a resource may arise. This is a major concern of the provincial government (see Alberta Land Use Forum 1974). It is also of concern to a specific user group at a resort where cottages exist. At Pigeon Lake the Summer Village Councils have a plurality of cottagers and the main concern of the Villages will coincide thus with those of the cottagers. As the latter would rather not see their beach and summer village roads and paths, frequented by non-residents, beyond what is absolutely necessary for public access, they may tend to discourage any commercial development which could attract a large clientele. Indeed at Pigeon Lake, the strip development of cottaging along the shores of the lake may have hampered the evolution of any nuclear concentration of business activity, where good access and economies of scale could be available.

Two specific recommendations can be made with regard to resort businesses in general:

(1) that the Provincial government should encourage development of viable businesses catering to the recreation trade through provincial aid in the form of grants and loans to locally owned businesses. Financial assistance from the main commercial banks to small businesses in Canada is generally poor for amounts around $50,000.000, particularly if the business is innovative and seeking venture capital support (Financial Post 1974: 3). Such grants and loans are already available through the Alberta Opportunity Company created in 1972 by the Government of Alberta. However, such assistance is dependent on application by businessmen and not through any policy directive by this government agency.

(2) that lake shore land should not be allocated almost wholly to private use such as cottaging, but that

physical planning should design more public access points to the lake and service centres with businesses servicing cottagers and visitors to the lake. Apart from the constraints exercised by the overall demand for goods and services generated by this type of recreation development, it is difficult to develop service settlements centrally located because of the linear nature of the recreation space in the vicinity of the lake. However, a degree of centrality could be designed in the arrangement of cottage developments, parks and campgrounds, service outlets, marinas, wildlife and other land uses of the recreation resource, if land further away from the lake shore was utilized for some of these facilities. Through such physical planning more lake shore areas could be opened up to a variety of public uses.

In the case of Pigeon Lake it is suggested that there is unnecessary duplication of certain enterprises and that many operations do not yield a vialbe economic return on their investment as evidenced to some extent by their run down appearance. The Pigeon Lake local economy does not constitute an economically depressed region but probably in common with other lake resort areas in the Province, it appears that local residents do not benefit as much as business in Edmonton in particular, from recreation activities in its hinterland. Although seasonal variation in trade was not mentioned by local businessmen in the survey as being a problem because of the availability of other employment in the off-season and possibly the small scale of their businesses, in the light of the recommendations made above a problem might arise since larger investments in recreation enterprises may require that revenue is derived on a year round basis in order to cover higher maintenance costs and capital interest payments. At the same time, however, it is possible that such larger operations will have the capacity to develop the potential for deriving an income in the off-season as well.

Other local residents who could benefit in a more sustained way from lake shore developments are farmers. In most cases cottage lots have been bought from non-residents rather than directly from the farmer.[3] Windfall gains due to land appreciation, especially on subdivided land, have thus accrued to cottagers and developers from outside the local economy. Obsiously if the market forces are allowed to continue their free play cottage ownership will become even more exclusive. However, if this is acceptable in terms of the goals of the society, it is more desirable from the point of view of this study, that such windfall benefits accrue to local residents and farmers, rather than to non-residents. A further possibility exists in the case of farmers whose land encompasses an attractive lake shore area, particularly in a marginal farming location. This opportunity involves substantial investments in recreational facilities on the farm to the extent that farming activity becomes of minor importance in overall income earned and the farm becomes a resort farm rather than a farm where recreational income is ancillary to income from farm products.[4] In the case of such recreational development, provincial planning and funding assistance could be forthcoming because of the interest by the provincial government in devising planning policy for the recreational development of Alberta lakes. Such farm resorts would provide large units for comprehensive planning. A condition of the financial aid assistance could be that there would be government involvement in the physical planning of the resort. This comprehensive planning of resort development would circumvent development through a number of small scale enterprises, which are more difficult to control in terms of aesthetic considerations. This is not to suggest that large scale enterprises should have always a monopoly situation in recreational development on lake shores. In the case of Indian reserve land such a monopoly situation would probably exist although limited to the area of the reserve. The prospects of increasing recreation benefits to Indians are otherwise similar to those of the farmer.

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[3] Klippenstein and Ironside (1973: 23-33) have reported that the interest among farmers in Alberta to become involved in recreation developments on their land is increasing.

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[4] Most examples of this type of operation exist in the USA, though the guest or dude ranch can be found in Western Canada as well (Ironside 1971: 1-11).

Several recommendations can be made, therefore, in the context of these results:

(1) that farmers be encouraged to lease their land for recreational development such as cottaging. The lease could be sufficiently long term (ten to twelve years) to encourage good quality construction of cottages but not too long that the term of the lease could not be changed in order to benefit the lessor in the face of inflation or a rapidly appreciating asset. An alternative method would be an annual lease scaled in amount to the assessed value of the cottage for tax purposes. With this type of land tenure the possibilities for physical planning to respond to the changing land use needs of recreational lake shore areas would be more flexible since ownership of land would remain in large units and land uses under leasehold are by definition not necessarily permanent. The farmer benefits and the long term interest of the public may be met. It is also possible that such lease arrangements would keep the market price of access to a cottage at a less inflated level and thus perhaps even widen access to include less the wealthy strata of the population.

(2) that farmers be encouraged to develop cottage lake lots themselves as a farm-based recreation business.

In this case limited income may also be derived through sales of farm produce to the users of such facilities. The provision of these facilities could either be arranged on a leasehold basis as discussed above or rented out on a short term basis (week or month; see Åre 1971). The latter would probably render access to this type of recreation for more people, especially in the long term as recreational resources within a reasonable distance of major population concentrations, become increasingly scarce. It is possible also that this type of farm-based recreation would reduce the appreciation of lake shore land which would aid in not jeopardizing further the equity aspect concerning who does and who does not have access to cottages for recreation.

(3) that farmers be encouraged with government financing and planning participation to develop farm resorts where they hold substantial tracts of lake shore land and where a recreational potential exists.

Another area where possibilities of using recreation as a vehicle for rural development exists and which certainly has planning policy implications, is that of the public sector. To improve the financial situation of local rural municipalities, it is possible that taxes on cottages and other uses of recreation resources could be levied by rural communities. It can be argued that the professional and business people who are the dominant group in cottage ownership, could easily afford tax increases on their cottage use and would be willing to pay increases to retain use of their investment. On the other hand, tax increases would probably force the market price on cottages even higher with adverse effects for access as discussed above. This could be counteracted by instituting a progressive capital gains tax on cottage sales. Nevertheless, there are considerable public expenditures by county municipalities, expenditures which are derived from the non-cottager permanent population of the rural area in which the recreation resource is located, to up-grade access roads and other infrastructure for people using the recreational resource. It can be argued that some of this outlay should be borne to a greater extent by the "visitor" population, who are mostly in terms of earning capacity, in higher income categories than rural residents.[5] The following recommendation is made therefore:

(1) that rural counties level a public infrastructure tax on recreational uses of lakes. This tax could probably be directly levied on cottagers or summer villages and county owned parks and indirectly in the case of provincial parks, through sharing arrangements with the province.

It is clear that there are ways and means to improve benefits to local rural residents from a recreational resource development though opposition to such recommendations will undoutbedly be strong from present resource users. In the case of resorts developed already as at Pigeon Lake, the opportunities for government initiative in instituting some of these recommendations as part of recreational and regional development planning is obviously circumscribed. However, in areas such as north east Alberta where many lakes have excellent potential, where a depressed economy exists and where much land is owned by the Crown, a clean slate does exist for innovative planning in the physical sense as well as that of regional economic development. The alternative of continuing the existing minimal government policy for lake recreation in Alberta would be clearly disastrous in terms of future public access to the province's lakes and shore lands.

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[5] On equity grounds the situation where sections of the metropolitan population who cannot afford to participate in resource based recreation opportunities still contribute to its financing, may be questioned in this context.

V:2 Summary and Conclusions

The main task set forth in this study is defined in its three major objectives:

(1) to attempt to assess the magnitude, type and location of expenditures incurred by recreationists.

(2) to evaluate the importance of different recreational pursuits in contributing to the generation of money flows, their size, type and location.

(3) to evaluate the economic impact on the local economy as well as to investigate ways and means to increase the benefits to local residents.

Pigeon Lake was selected as a study area because it is located within close distance of major urban centres thus allowing it to enjoy a greater economic potential than more remote lakes; several groups of recreationists share in the use of the lake allowing for an analysis of the importance of different recreational pursuits. In addition, the presence of an Indian reserve on the lake would enable the study to shed light on the extent to which native peoples benefits from resource based recreational developments.

Field surveys were carried out to gather information relevant to this study. The analysis of data obtained has been divided into two parts. The first part concerns the generality of recreation on Pigeon Lake. Due to data constraints this analysis was in its quantitative form, limited to cottaging. Thus, in the case of cottaging, nine expenditure variables (Purchasing or Building Costs (Y_1), Repairs (Y_2), Improvements (Y_3), Furnishings (Y_4), Equipment (Y_5), Up-Keep (Y_6), Taxes (Y_7) Utilities (Y_8) and Insurance (Y_9) were correlated against eight variables describing the cottager and the lake, Income (X_1), Age (X_2), Family Size (X_3), Participation in Recreation Activities (X_{4-6}) Number of Days of Occupancy of Cottage (X_7) and Beach Quality (X_8). It was hypothesized that the relationship between X and Y variables stating that only X_4 to X_6, especially X_6, which is suggested to reflect some kind or personal preference or valuation of the cottage, would show a general positive correlation with the Y variables, was substantiated. It was also found as hypothesized, that X_7 correlates positively with the size of expenditures on taxes, utilities and insurance. Due to a deficiency in the measurement of the income variable, the hypothesis entertained for this variable could only be ascertained to a limited degree. Only in the case of "purchasing or building costs" is it concluded that income is positively correlated with the size of costs incurred. The relatively low degree of variation in the Y variables which is explained by the X variables that do correlate with the Y variables, did not warrant constructing a regression model which could be utilized for estimation of the economics of similar recreation developments elsewhere. The general lack of correlation between socio-economic and expenditure variables suggests that other than socio-economic variables account for the variation in Y. As such variables may be difficult to measure and are likely to operate stochastically in the whole universe, it is interpreted that what is true for recreation on Pigeon Lake is probably true elsewhere in this universe.

In the case of park visiting and institutional camps the generality of Pigeon Lake could not be ascertained with the same degree of confidence. It seems likely however that facilities elsewhere, similar in nature to those on Pigeon Lake, will exhibit similar economic characteristics.

Part two of the analysis deals with the spatial economic impact of recreation. Hypotheses concerning the spatial economic impact of recreation are developed within a framework of the metropolis - hinterland theory and given a spatial expression utilizing the Clawson concept of the five phases of the recreation experience. Strong support is found for the overall hypothesis concerning the spatial economic impact, which is that the metropolis will receive the lion share of the economic impact, Thus, it is estimated that slightly more than eighty percent of the total estimated $15,412,392.88 spent in the form of capital expenditures by cottagers, never entered the local economy. Similarly it has been shown that between fifty to sixty percent of the estimated $2,022,206.59 spent by cottagers in the form of current expenditures never enters the local economy. In the case of expenditures incurred by park visitors only current expenditures are measured. The spatial distribution of these expenditures appears similar to cottaging with slightly more than sixty percent of the estimated total of $387,602.04 being spent outside the local economy. Institutional camps generated an estimated $860,066.67 in capital expenditures and they incurred an estimated $120,399.33 in current expenditures in the year of 1973. The spatial distribution of these expenditures is overall quite similar to that of cottaging and park visiting.

It is clearly the case that cottaging is by far the most important recreation activity with regard to the overall volume of recreational trade generated. However, it is also inferred that parks and campgrounds may have a profound effect on business activity located in the vicinity of these public areas.

In terms of benefits to local residents, it has been shown that the benefits to Indians are rather minute. The employment impact on local business is estimated to be 34.64 full-time year round jobs at a total salary of $250,151.25. In the case of local business it is deduced that operations geared to sales of services as opposed to goods contributed on an average basis, more to creating a local economic impact than do goods oriented businesses.

Clearly the overall inference which can be drawn from the results presented in this study, is that the metropolis or the recreationist's origin directly receives the major part of the economic impact from recreation activities based in the hinterland economy. The hypothesis stating that this economic spatial imbalance would increase, enhancing the strength of the metropolis economy over time, could not be ascertained in desired detail although there are some indications which supports the hypothesis. In the Clawson framework it is apparent that the anticipation and/or the recollection phases are by far the most important concerning the allocation of expenditures and the economic impact of resource based recreation. It is also clear that, for the type of recreation with which this study is concerned, the travel components of the recreation experience are of minor consequence although during the phase of travel to site, in the case of cottaging, certain centres along the main access roads to the recreation resource may receive rather large volumes of trade. As one of the concerns of this study is that of regional economic planning, the focus of the analysis of the on-site experience has involved also a section devoted to recommendations which tentatively could be utilized in attempts to increase the benefits to local residents from recreational resource developments.

V:2.1 Suggestions Concerning Future Research

One of the overall problems facing this type of study is that in some ways it becomes too general in the attempt to present a comprehensive picture of the economic geography of a total recreation resource rather than concentrating on one particular recreational activity using this resource. It could be proposed therefore that research in this area of the economic geography of recreation, may concentrate on single recreation activities rather than a particular resource. The different spatial and time attributes of recreation trips and their recreational content, suggests that they will have different economic geographical implications. An apparent utility of this research approach would be that in the case of employing recreation as a tool in regional economic development, activities which have a relatively higher impact on the hinterland economy could be given extra priorities in their development. Additional insights into the economics of recreation would be gained of course if data allowing temporal analyses could be obtained. The practical difficulties will probably remain, especially as most research in this field remain uncoordinated, making comparisons of research study results rather difficult.

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APPENDICES

APPENDIX 1

DEPARTMENT OF GEOGRAPHY
TELEPHONE (403) 432-3274

THE UNIVERSITY OF ALBERTA
EDMONTON, CANADA T6G 2H4

Dear Cottagers,

The information which Dr. Ironside and I are trying to obtain by this interview will be kept confidential and used only for the preparation of my Master's thesis in geography and a research report. The study is being funded by the Alberta Environmental Trust.

The questions we will ask you, to a very large extent, concern your expenditures resulting from the ownership of a cottage. We are fully aware that at least some of the questions we intend to ask you could be perceived as being intrusive. However it should be stressed that we are not interested in your expenditures as a private person but as one out of a sample of 200 cottagers. Thus the information we hope you will give us will be aggregated together with the information of 200 other cottagers. When we later analyse this data for a thesis, there will be no disclosure of any individual's response to the questionnaire or any way in which it could be identified. Confidentiality of the data will thus be retained and the information will not be available for any other person in the form of the questionnaires.

The significance of obtaining the information sought is that it will shed light on the economics of recreation especially in terms of its impact on a local rural economy. Little is known about this yet in Alberta. The establishment of a factual basis for an evaluation of recreation in economic terms is very important. This information will be useful when planning for new recreational developments whether this is done by private individuals or public agencies. As competition among different land uses is increasing and as economic considerations are important in associated decision-making, this makes the evaluation of this aspect of recreation even more significant. This research will thus help to strengthen the role of recreational land use in the planning process and benefit those people who participate in outdoor recreation - the cottagers, provincial park visitors, lake and beach users.

Your cooperation is greatly appreciated in this study. Thank you in advance for it.

Sincerely

Karl Bohlin

Karl Bohlin
Dr. R. G. Ironside
Associate Professor
University of Alberta

COTTAGE QUESTIONNAIRE VERSIONS A AND B

Did you acquire this cottage lot with or without buildings? ----- With Without

If without, proceed on VERSION B

Do you rent this cottage? -- Yes No

If yes, stop interviewing

General Information

1A, 1B Is this cottage on a waterfront lot? ---------------------- Yes No

If no, is the cottage on a second or third row lot? ------ 2nd 3rd

2A, 2B Are you or your family the single owner of this cottage --- Yes No

If not, how many persons/families share in the costs of ownership of the cottage? ---------------------------- 1 2 3 4

3A, 3B How old is the cottage? ------------------------------------ 0-3 4-6 7-9 10-14 15-20 21-30 31+years

4A, 4B How long have you owned or shared the ownership of the cottage? -- 0-3 4-6 7-9 10-14 15-20 21-30 31+years

5A, 5B During which months of the year do you visit this cottage? - J F M A M J J A S O N D

6A, 6B Could you try to estimate for each month the number of days you visited the cottage last year? ------------------------ J F M A M J J A S O N D

COMMENTS ____

____

____

____

7A, 7B Do you rent your cottage out anytime during the year? ------ Yes No

If yes, what season during the year do you rent it out? -- Winter
Spring
Summer
Fall

If yes, could you please tell me how much you charge either on a weekly or monthly basis? ---------------------- $_______/week

$_______/month

8A, 8B What is your permanent place of residence? --------------- ______________

9A, 9B Could you describe the route you usually take when going to the cottage. Use road numbers starting from your permanent place of residence ----------------------------- ____ ____ ____
____ ____ ____

10A, 10B How many persons are using this cottage regularily? ______________

11A, 11B How many of these belong to the immediate family? ______________

12A, 12B I will read from a list of leisure activities. Could you indicate for each activity how often you and the members of your family take part in these activities by selecting a number according to the answer card I gave you?

	No. People Performing Activity
Swimming ---	1 2 3
Skin & scuba diving --------------------------------	1 2 3
Fishing --	1 2 3
Canoeing ---	1 2 3
Sailing --	1 2 3
Row boating --	1 2 3
Motor boating --------------------------------------	1 2 3
Water skiing ---------------------------------------	1 2 3
Horseback riding -----------------------------------	1 2 3
Golfing --	1 2 3
Games & team sports --------------------------------	1 2 3
Trail hiking ---------------------------------------	1 2 3
Walking for pleasure -------------------------------	1 2 3
Sitting around/sunbathing --------------------------	1 2 3
Cross country skiing -------------------------------	1 2 3
Snowshoeing --	1 2 3
Ice fishing --	1 2 3
Snowmobiling ---------------------------------------	1 2 3
Photography --	1 2 3
Hunting --	1 2 3
Household hobbies (eg. crafts) ---------------------	1 2 3

COMMENTS ____
____
____

Purchase of Cottage

13A. Do you own or rent this cottage lot? ------------------------- Own Rent

If rent, could you please give me the name and address of the person from whom you rent the lot? For the address it is sufficient if you tell me the city, town or village where this person lives --------------------------------- ____________ Name ____________ address

14A. What was the purchase price of this lot including buildings present at the time of purchase? -------------------------- $____________

15A. Did you buy your cottage and lot:

1. from a real estate/land development company? ----------- ______1
2. from a private person via a realtor? ----------------- ______2
3. directly from a private person? --------------------- ______3

INSTRUCTION FOR QUESTION 16 SELECT EITHER 1,2 or 3 ACCORDING TO ANSWER TO QUESTION 15.

16A. Could you please tell me the name and address of:

1. The company that sold you the lot and cottage? --------- ____________ Name ____________ Address
2. The realtor who sold you the lot and cottage? -------- ____________ Name ____________ Address
3. The person who sold you the lot and cottage? -------- ____________ Name ____________ Address

For the address it is sufficient if you can tell me the name of the city, town or village where the person lived/ realtor or company was located at the time of purchase.

COMMENTS ____

____

____

17A. Could you try to estimate the price of the lot excluding the value of buildings and other improvements of the lot at the time of your purchase?-- $__________

18A. What is the present size of your lot? --------------------- __________

No. of lots -------------------------- __________

19A. Have you acquired any additional land adjacent to the lot since you first bought this lot? ---------------------------- Yes No

If yes, how much? -------------------------------------- __________

20A. What would you have to pay today to buy:

1.) this lot without any improvements or buildings? ----- $__________

2.) this lot with buildings and improvements? ---------- $__________

14 B. What was the purchase price of this lot? ------------------- $__________

15 B. Did you buy your cottage lot:

1. from a real estate/land developing company? ------ ____1
2. from a private person via a realtor? ------------- ____2
3. directly from a private person? ------------------ ____3

INSTRUCTION: SELECT EITHER 1, 2 OR 3 ACCORDING TO ANSWER TO #15.

16 B. Could you please tell me the name and address of:

1. the company that
2. the realtor who sold you the lot? --------- __________ Name
3. the person who

__________ Address

For the address it is sufficient if you can tell me the name of the city, town or village where the person lived/ realtor or company was located at the time of purchase.

17 B. What is the present size of your lot? ----------------------- __________

No. of lots ------------- __________

18 B. Have you acquired any additional land adjacent ot the lot since you first bought this lot? ---------------------------- Yes No

If yes, how much? ---------------------------------- __________

- -

Comments ____

19 B. What would you have to pay today to buy:

1) this lot without any improvements or buildings? ------- $__________
2) this lot with buildings and improvements? ------------- $__________

Construction Costs of the Cottage

20 B. How much money did you spend on building this cottage? If applicable include all money you borrowed for this purpose. $__________

21 B. When you built the cottage?

1. did you engage any company providing, building, plumbing, electrical services, etc.? ----------- Yes No

2. did you hire any other help? ------------------- Yes No

3. did you do any work yourself? ------------------ Yes No

4. did you buy any building materials and tools yourself? -------------------------------------- Yes No

IF NO FOR ALL QUESTIONS #21, 1-4:

5. Could you please tell me how you organized the work involved in this investment? -------------

Location	$Spent

INSTRUCTION: ASK #22 ONLY IF 21, -1 WAS YES

22 B. Could you please give me the names and addresses of the companies which were involved in the construction of this cottage and how much you paid each one? For the addresses it is sufficient if you tell me the city, town or village where each company was located when you contacted them.

Location	$Spent

INSTRUCTION: ASK 23 ONLY IF #21, -2 WAS YES

23 B. Could you please state the home address of each person you hired as help when building this cottage and how much you paid each one? It is sufficient if you tell me the city, town or village where each person lived when you hired them.

Location	$Spent

Comments ____

INSTRUCTION: ASK # 24 ONLY IF 21, -4 WAS YES

24 B. Could you please tell me where you bought the materials and how much you spent on each item for each separate location?

Material	Location	$ Spent

Investments in the Cottage

21A, 25B Since you became the owner of this cottage how much money have you spent on:

1) major repairs of the cottage, such as a new roof, floors, walls etc.? -- $______

2) improvements of the cottage, such as wells, sanitation, construction of extension buildings to the cottage or other buildings on this lot such as a garage, storage facilities, etc? (IN THE ANSWER TO THIS QUESTION PLEASE EXCLUDE EXPENSES FOR UP-KEEP OF THE COTTAGE) -------------- $ ______

3) improvements of this lot, such as landscaping, fences, etc.? -- $ ______

INSTRUCTION FOR QUESTION 22: ASK #20 ONLY IF RESPONDENT DECLARED ANY EXPENDITURES IN #21; 1-3

22A, 26B. When you made these investments:

1) did you engage any company providing building, plumbing electrical services, etc.? -------------------------------- Yes No

2) did you hire any other help? ----------------------------- Yes No

3) did you do any work yourself? ---------------------------- Yes No

4) did you buy any building materials and tools yourself? --- Yes No

---

IF NO FOR ALL QUESTIONS #22, 1-4:

5) Could you please tell me how you organized the work involved in these investments?

Location	$Spent

COMMENTS ____

____

____

INSTRUCTION: ASK QUESTION #23 ONLY IF #22, 1) WAS YES

23A, 27B Could you please give me the names and addresses of the companies that did this work for you and how much you paid each one? It is sufficient if you tell me the city, town or village where each company were located when you contacted them.

Location	$Spent

INSTRUCTION: ASK QUESTION #24 ONLY IF #22, 2) WAS YES

24A, 28B Could you please tell me the home address of each person you hired as help for this work and how much you paid each one? It is sufficient if you tell me the city, town or village where those persons lived when you hired them.

Location	$Spent

INSTRUCTION: ASK QUESTIONS #25 ONLY IF #22 WAS YES

25A, 29B Could you please tell me where you bought the materials and how much you spent in each separate location?

Location	$Spent

26A, 30B What was the total value of furnishings in the cottage in 1972? -- $________

27A, 31B Could you try to arrive at an approximate estimate of where you bought it and how much you spent in each location?

Location	$Spent

28A, 32B What was the total value of your equipment, such as boats, gardening tools, garden furniture, etc., which was used at the cottage in 1972 ---------------------------------- $________

29A, 33B Could you try to remember where you bought it and how much you spent at each location?------------------------------

Location	$Spent

COMMENT ____

____

____

30A, 34B How much did you spend on up-keep of your cottage and grounds in 1972? -- $______________

31A, 35B Where did you spend this money? ------------------------

Location	$Spent

32A, 36B How much did you pay in taxes on this cottage in 1972?--- $______________

33A, 37B How much did you pay for utilities for your cottage in 1972?-- $______________

FINANCING OF COTTAGE

34A, 38B When you bought this cottage did you borrow any money?--- Yes No

INSTRUCTION: IF THE ANSWER TO #35 IS NO CONTINUE ON #38

35A, 39B From what type of finance institution did you obtain the loan?-- ______________

36A, 40B What is the name and location of this company?---------- ______________ Name

______________ Location

37A, 41B Approximately, how much money did you borrow from this finance institution? --------------------------------------- $______________

38A, 42B Have you since the purchase of this cottage borrowed any money in order to finance any investment you have made in the cottage? -- Yes No

INSTRUCTION: IF THE ANSWER TO #38 IS NO CONTINUE ON #42

39A, 43B From what type of finance institution did you obtain this loan?-- ______________

40A, 44B What is the name and location of this company?----------- ______________ Name

______________ Location

41A, 45B Approximately, how much money did you borrow from this institution?--- $______________

Socio-Economic Characteristics of Cottagers

INSTRUCTION: GIVE RESPONDENT ANSWER CARD NO. 2

42A, 46B Could you please indicate, by selecting appropriate letter, your age and the age of the members of your family as well as indicate whether the selection stands for male or female

	Total	Male	Female
A. under 20	____	____	____
B. 20-24	____	____	____
C. 25-29	____	____	____
D. 30-34	____	____	____
E. 35-39	____	____	____
F. 40-44	____	____	____
G. 45-49	____	____	____
H. 50-54	____	____	____
I. 55-59	____	____	____
J. 60-+	____	____	____

43A, 47B What is your occupation? ------------------------------ ____________

44A, 48B What is your spouse's occupation?---------------------- ____________

INSTRUCTION: GIVE RESPONDENT ANSWER CARD NO. 3

45A, 49B Would you please indicate the letter on this card which best describes your family income?

A.. under $ 3,000
B. $3,000 - 3,999
C. $4,000 - 4,999
D. $5,000 - 5,999
E. $6,000 - 6,999
F. $7,000 - 7,999
G. $8,000 - 8,999
H. $9,000 - 9,999 -------------------- ____________
I. $10,000 - 14,999
J. $15,000 - +

46A, 50B How many full-time incomes contribute to your family's total income? ________

47A, 51B How many part-time incomes contribute to your family's total income? ________

48A, 52B What is the total floor-space of this cottage?-------------------- ________

49A, 53B How much do you pay for insurance of this cottage, including equipment? $________

3

Cottage Questionnaire; Expenditure Diary

Time period during which expenditures are being recorded: / - /

Number of persons present when the expenditures were made either you were on your way to the cottage or you stayed at the cottage: ___________

Could you please, for the following list of items check off how much you spent on each item-group, where you spent it (city, town or village) and if you at the time of purchase stayed at your cottage or if you were going to the cottage.

	$spent	place of purchase	at cottage	to cottage
1.) Groceries and meats ------------------				
2.) Meals or snacks at a drive-in, cafe, etc.				
3.) Sundry items (eg. cigarettes, candy, magazines, toys, pop, etc.) -------------				
4.) Bait or freezing services, ice -------				
5.) Accessories (cameras, films, etc.) -----				
6.) Clothing ----------------------------				
7.) Medicine ----------------------------				
8.) Entertainment, shows, dances, etc. ------				
9.) Automobile - gas & oil ---------------				
10.) Automobile - Other (include repairs) -				
11.) Boat - gas & oil ---------------------				
12.) Boat - Other (include repairs) -------				
13.) Boat - rental or launching fees ------				
14.) Liquor ------------------------------				
15.) Camping equipment & sporting goods (eg. fuel, stoves, coolers, fishing tackle etc.)				
16.) Major new purchases (eg. boats, motor, guns, etc. ---------------------------				
17.) Miscellaneous (any expenditure not previously included) -----------------				

APPENDIX 2

DEPARTMENT OF GEOGRAPHY
TELEPHONE (403) 432-3274

THE UNIVERSITY OF ALBERTA
EDMONTON, CANADA T6G 2H4

Dear Park Visitors:

The information which Dr. Ironside and I are trying to obtain by this interview will be kept confidential and used only for the preparation of my Master's thesis in geography and a research report. The study is being funded by the Alberta Environmental Trust.

The questions contained in our questionnaire concern your expenditures associated with park visiting. In order to relate this information to causal variables, the questionnaire also contains questions regarding usage and socio-economic characteristics. We are fully aware that at least some of the questions we intend to ask you could be perceived as being intrusive. However, it should be stressed that we are not interested in your expenditures as a private person but as one out of a sample of 200 park visitors. Thus the information we hope you will give us well be aggregated together with the information of 200 other park visitors. When we later analyse this data for a thesis, there will be no disclosure of any individual's response to the questionnaire or any way in which it could be identified. Confidentiality of the data will thus be retained and the information will not be available for any other person in the form of the questionnaires.

The significance of obtaining the information sought is that it will shed light on the economics of recreation especially in terms of its impact on a local rural economy. Little is known about this yet in Alberta. The establishment of a factual basis for an evaluation of recreation in economic terms is very important. This information will be useful when planning for new recreational developments whether this is done by private individuals or public agencies. As competition among different land uses is increasing and as economic considerations are important in associated decision-making, this makes the evaluation of this aspect of recreation even more significant. This research will thus help to strenghten the role of recreational land use in the planning process and benefit those people who participate in outdoor recreation - the cottagers, provincial park visitors, lake and beach users.

Your cooperation is greatly appreciated in this study. Thank you in advance for it.

Sincerely
Karl Bohlin
Karl Bohlin
Dr. R.G. Ironside
Associate Professor
University of Alberta

PARK VISITOR QUESTIONNAIRE

Park ________ Date ________ Time ________ Weather ________ No. ________

1.) What is your permanent place of residence? ------------------ ______________

2.) How long did you stay in the park?

A.) 1-4 hours E.) three days I.) seven days
B.) 5-8 hours F.) four days J.) over one week A B C D
C.) over night G.) five days K.) over two weeks E F G H
D.) two days H.) six days ------------------------- I J K

3.) What kind of trip was this? --------------------------------
☐ Day
☐ Weekend
☐ Part of vacation

4.) Have you visited Pigeon Lake before? ------------------------ Yes No

IF YES; how many years have you been coming to this lake? ---- 1 2 3 4
5 6 6+

IF YES; how often do you visit this lake per year? --------- 1 2 3 4
5 6 6+

5.) During this trip did you visit any other public park or beach
on Pigeon Lake? -- Yes No
IF YES; which ones? -- ______________
____
____

6.) Which of the following best describes the group forming
your party at this visit?

A.) one person alone E.) two/more couples A B C D
B.) one family with children F.) group of friends E F G H
C.) two families with children G.) organized group
D.) one couple only H.) other

7.) Could you please make a break-down of the age composition of your party by scoring the appropriate number of males and females in the table below?

Age group	No.of males	No.of females
under 20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54		
55-59		
60+		

8.) What is your occupation (head of family or party)? ----------- ____________

9.) What is your spouse's occupation? ----------------------------- ____________

10.) Could you please circle the letter that best describes your family/party income?

A.) under $3,000	E.) $6,000-6,999	I.) $10,000-14,999
B.) $3,000-3,999	F.) $7,000-7,999	J.) $15,000+
C.) $4,000-4,999	G.) $8,000-8,999	
D.) $5,000-5,999	H.) $9,000-9,999	

A B C D
E F G H
I J

11.) How many full-time incomes contribute to your family/party's total income? -- ______

12.) How many part-time incomes contribute to your family/party's total income? -- ______

13.) This question concerns items you have purchased during your stay at this park,therefore,exclude anything you brought with you when you first arrived.Thus,could you please estimate your paty's expenditures for the following list of items as well as indicate where it was spent.

	$spent	Place of purchase
1.) Groceries and meats ---------------------		
2.) Meals or snacks at a drive-in,cafe,etc. -		

	$spent	Place of purchase
3.) Sundry items (eg. cigarettes,candy, magazines,toys,pop,etc.) ----------------		
4.) Bait or freezing services,ice ----------		
5.) Accessories (cameras,films,etc.) -------		
6.) Clothing -------------------------------		
7.) Medicine -------------------------------		
8.) Entertainment,shows,dances,etc, --------		
9.) Automobile - gas &oil ------------------		
10.) Automobile - other (include repairs) ---		
11.) Boat - gas & oil ----------------------		
12.) Boat - other (include repairs) ---------		
13.) Boat - rental or launching fees --------		
14.) Liqour --------------------------------		
15.) Camping equipment & sporting goods (eg. fuel,stoves,coolers,fishing tackle) ----		
16.) Fees - camping ------------------------		
17.) Fees - other (eg.fishing licences) -----		
18.) Major new purchases (eg. boats, motors, guns,etc.) ----------------------------		
19.) Miscellaneous (any expenditure not previously included) ------------------		

14.) Did you buy any of the above listed items either before you left home or on your way to the park for consumption at your stay on the lake? -- Yes No

IF YES; How much did you spend and where? -------------------

Location	$Spent

APPENDIX 3

DEPARTMENT OF GEOGRAPHY
TELEPHONE (403) 432-3274

THE UNIVERSITY OF ALBERTA
EDMONTON, CANADA T6G 2H4

Dear

The information which Dr. Ironside and I are trying to obtain by this questionnaire will be kept confidential and used only for the preparation of my Master's thesis in geography and a research report. The study is being funded by the Alberta Environmental Research Trust.

This questionnaire has been sent out to all institutions having camps on Pigeon Lake. The information we hope to gather by this survey, together with previously conducted interviews with cottagers and businessmen at, and visitors to Pigeon Lake, will make it possible to establish a façtual basis for an evaluation of recreation in economic terms. This type of information is becoming increasingly important when planning for new recreational developments. As competition among different land uses is increasing this research will help to strengthen the role of recreational land use in the planning process and thus benefit those who participate in outdoor recreation.

In order to meet set deadlines for analysis of our survey data, we would be most grateful if you, at your earliest convenience, would consider filling out - returning our enclosed questionnaire.

In case you encounter any problems when answering the questionnaire or have any other questions about the purpose etc. of this survey, please feel free to contact us at phones: 432-5624 or 432-3564.

Your cooperation is greatly appreciated in this study. Thank you in advance for it.

Sincerely,

Karl Bohlin, and

Dr. R.G. Ironside
Associate Professor

KB:RGI:fl
Enclosure

Institutional Camps Questionnaire

1. Does your organization own or lease the campground you are using?

☐ OWN ☐ LEASE

If the answer to question #1 is lease; how much do you pay per annum for the lease? $__________/year

What is the home address in terms of one name of the town or city of the lessor? ______________

If the answer to question #1 is own; please complete questions 2-9. If not applicable please write N.A. in space provided.

2. What year did your organization aquire this piece of land? ______________ year

3. What is the size or measurements of this property? ______________

4. What was the purchase price of this property? $______________

5. Co[illegible] you try to remember the home address, i.e. the name of the village, town or city, of the previous owner? ______________

6. How much money has your organization spent on improvements of this property (land and buildings) since you acquired it? $______________

7. Could you try to remember where, i.e. what city, town or village, this money was spent (for materials, building contractor services etc.)? (If several locations try to state each one and the proper amount separately).

Location	$ Spent

8. How much did you spend on upkeep of this property in 1973? $________________

9. How much did you spend on taxes and utilities in 1973? taxes---$________________

utilities---$________________

10. What was the total value of your equipment, such as boats, canoes etc., that was used at your camp in 1973? $________________

Could you try to remember where it was bought.

Location	$ Spent

11. What were the total costs for supplies like food, beverages and other miscellaneous items needed for the operation of the camp in 1973 and where (name of town or city) did you purchase these items?

Location	$ Spent

12. Do the participants in your camp spend any money on sundry items at the lake?

☐ YES ☐ NO

If yes, could you possibly arrive at some estimate of the total size of such expenditures for a whole season?

$________________

13. When is your camp in operation? ____________________.

14. What is its maximum capacity? ____________________.

15. How many participants did your camp have for the whole season in 1973? __________

16. Where do the participants come from? ______________________________

____.

APPENDIX 4

DEPARTMENT OF GEOGRAPHY
TELEPHONE (403) 432-3274

THE UNIVERSITY OF ALBERTA
EDMONTON, CANADA T6G 2H4

August 27, 1973

Dear Businessmen:

The information which Dr. Ironside and I are trying to obtain by this interview will be kept confidential and used only for the preparation of my Master's thesis in geography and a research report. The study is being funded by the Alberta Environmental Trust.

The information we hope to gather by interviewing the businessmen, together with previously conducted interviews with cottagers at, and park visitors to Pigeon Lake, will make it possible to establish a factual basis for an evaluation of recreation in economic terms. Primarily this information will be useful when planning for new recreational developments whether this is done by private individuals or public agencies. This is especially true as economic considerations are important in associated decision-making. The rather extensive information gathered on type, size and spatial allocation of expenditures that are made by cottagers and park visitors is of importance in this context. This has direct implications for the business community as it will be possible to analyse to what extent and in what sectors of the local economy there is a potential for increasing present revenues of businesses. This information can be made available to local businessmen on completion of the study.

The questions contained in this questionnaire concern then information necessary for establishing an estimate of the impact on the local economy of trade generated by recreationists. We are fully aware that at least some of the questions we intend to ask you could be perceived as being intrusive. However, it should be stressed that we are not interested in this enterprise as an individual enterprise but as one of all the businesses in the vicinity of Pigeon Lake. Thus, the information we hope you will give us will be aggregated together with the information of all other businesses in the area. When we later analyse this data for a thesis, there will be no disclosure of any individual's reponse to the questionnaire or any way in which it could be identified. Confidentiality of the data will then be retained and the information will not be available for any other person in the form of the questionnaires.

The significance of obtaining the information sought is that it will shed light on the economics of recreation especially in terms of its impact on a rural economy. Little is known about this yet in Alberta.

Your cooperation is greatly appreciated in this study. Thank you in advance for it.

Sincerely,

Karl Bohlin

Karl Bohlin,
Dr. R.G. Ironside,
Associate Professor
University of Alberta.

RGI/KB/ilh

BUSINESS QUESTIONNAIRE

Type of business: ______________________________

1. Is this business in operation all year round? YES NO
   IF NOT, which months of the year is it in operation? J F M A M J
   J A S O N D

2. How would you describe this enterprise in terms of the character of the ownership?
   A Single
   B Family
   C Joint-2 or more
   D Co-op
   E Company
   other F ________

3. Could you try to remember the number of persons working in this business for each of the five last years starting with last year and using a breakdown into owners, permanent employees and temporary employees respectively?

YEAR	OWNERS	P. EMPL.	T. EMPL.
1972			
1971			
1970			
1969			
1968			

4. Could you please give the same figures up to date for this year(1973)? ______ ______ ______

5. IF A OR B TO Q. 2: Does anyone of the owners work only part of the year or part-time during any part of the year in this business? YES NO
   IF YES: Could you please specify this:
   ____
   ____
   ____
   ____

6. IF A OR B TO Q. 2: Does any one work outside this business either full-time or part-time either part of the year or all year round?
   ____
   ____
   ____
   ____

Business questionnaire...

7. Could you try to remember the gross turnover of this business for each of the last five years starting with 1972?

1972 $________
1971 $________
1970 $________
1969 $________
1968 $________

8. Could you try to estimate what the gross turnover will be for this year?

$________

9. Could you try to estimate the percentage of the gross turnover that is attributable to trade with people recreating at Pigeon Lake?

________%

10. Could you try to estimate the percentage of the gross turnover which stems from sales during the winter and summer seasons respectively?

________%
winter

________%
summer

11. Which good or service you sell is most important for your net revenue?

____

12. Of which good or service do you sell the largest quantities?

____

13. What was the total amount of wages paid to permanent respectively temporary employees in 1972?

P $________
T $________

14. Could you try to remember the home address in terms of town or city of the temporary employees?

____
____
____

15. Could you try to remember the size of annual investment made in this business for each of the five last years?

72 $________
71 $________
70 $________
69 $________
68 $________

16. IF A OR B TO Q2: Have you made any investments other than in your business during the last five years?

$________

Location ________

17. IF C-F TO Q2: Has this enterprise made any investments not directly associated with the operation of this business during the last five years?

$________

Location ________

Business questionnaire...

18. What is the permanent place of residence of the owner of this business? ____________

____

____

19. What are your expectations about the future profitability of this business? ____________

____

____

____

____

____

20. Do you own or lease these business premises? OWN LEASE

IF LEASE: How much do you pay for leasing these premises? $ ____________

IF LEASE: What is the permanent address of the owner? ____________

____

____

21. What was the total income of the owner(s) derived from this business last year? $ ____________